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IN THE SERVICE OF SCIENCE: THE HISTORY OF THE CHICAGO ACADEMY OF SCIENCES

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W. J. Beecher, Director

IN THE SERVICE OF SCIENCE : THE HISTORY OF THE CHICAGO ACADEMY OF SCIENCES

WALTER B. HENDRICKSON AND WILLIAM J. BEECHER

The Chicago Academy of Sciences was the outgrowth of meetings of natural history enthusiasts in Chicago who gathered in the office of Dr. Edmund Andrews in 1856.[1] As a result of these sessions, early in 1857 a formal organization of what was called the Chicago Academy of Natural Sciences was effected with Dr. James Van Zandt Blaney as the first president. Dr. Blaney was a graduate of Princeton University who did additional work with Professor Joseph Henry, the American scientist who was an eminent experimenter in electromagnetism and was to become the first secretary of the Smithsonian Institution. Blaney later went to the University of Pennsylvania to study medicine. He was one of the founders of Rush Medical College, and was active in a number of educational and social agencies in Chicago. His interests in science were in chemistry, and he was an ardent field naturalist. He taught chemistry and *materia medica* at Rush.3

Several of the other founders of the Chicago Academy were also doctors; as Dr. Nathan S. Davis said, "Members of the medical profession are everywhere the most zealous cultivators of the natural sciences."[4] Dr. Davis was Professor of Physiology and General Pathology at Rush Medical College. He had studied medicine at the College of Physicians and Surgeons of New York City and came to Chicago in 1849 where he was first associated with Rush, and finally with the School of Medicine of Northwestern University. He was a leader in

1. Robert Kennicott to Spencer F. Baird, The Grove, West Northfield, Illinois, Mar. 10, 1856. Letters to Baird from Kennicott in the Smithsonian Institution. Cited hereafter as SI. Copies of some of the letters are in the Archives of the Chicago Academy of Sciences, and some copies are also in the possesion of the Kennicott family.
2. [Nathan S. Davis] "The Chicago Academy of Natural Sciences," *The Northwestern Medical and Surgical Journal,* Dr. Nathan S. Davis, ed., Mar., 1857, p. 1.
3. A. T. Andreas, *History of Chicago from the Earliest Period to the Present Time,* v. 2, (1884-1886), p. 523.
4. "The Chicago Academy of Natural Sciences," p. 1.

organized medicine and a working member of the group that developed into the American Medical Association. In 1887 he was the first director of the International Medical Congress and also founded the Illinois Medical Society. Secretary William K. Higley, when he notified the Academy of Dr. Davis' death in 1904, said : " He led a useful and well-rounded life ; he was a leader in his profession and other fields of science and supported philanthropic movements."[5] He gave prestige status to the Academy in the Chicago community and served faithfully as an active member, officer, and committeeman.[6] Both of his sons and a grandson were also leaders in the Academy. Dr. Davis was an enthusiastic amateur naturalist, and his descendants followed in his footsteps. In the archives of the Academy is a note book, dated 1869, in which Nathan S. Davis, Jr., then a small boy, entered his daily observations on weather, birds seen, and other nature data. In later years he was interested in the batrachians and reptiles of North America and was somewhat of an authority. The grandson, Dr. Nathan Smith Davis III, was president of the Academy from 1926 to 1938.

Another doctor-founder, and also a lifetime member, was Hosmer Allen Johnson, who taught at Rush and at Chicago Medical College. An amateur in science, he was also a member of the Astronomical and Microscopical Societies in Chicago.[7]

Dr. Edmund Andrews deserves special mention because he very well may be designated as the father of the Academy, since he called and chaired the organizational meeting. He was a teacher of anatomy at Rush Medical College and also a founder of Chicago Medical College. He was an enthusiastic geologist and naturalist and attracted attention when he published a pioneering theory of the causes of intermittent geyser action. He was also the inventor of a system for using oxygen in mixture with other gases as an anesthetic. Another contribution was a paper on the operation of glaciers, and he was one of the first American geologists to accept Agassiz' theory of continental glaciation. In his day it was said, with

5. Chicago Academy of Sciences Minutes (Ms), v. 3, June 28, 1904, p. 20-24. These books are in the CAS Archives and will be cited as CAS Minutes.
6. James A. Phalen, "Nathan Smith Davis," *Dictionary of American Biography,* v. 5, p. 139.
7. *National Cyclopedia of American Biography,* v. 12, p. 409.

a sense of local pride, that few scientists had "such a record of profound accomplishments in diverse fields of endeavor as did Dr. Andrews." He was the first curator of the museum of the Chicago Academy of Sciences and he later served as president.[8]

Another well-known doctor was Franklin Scammon, whose special interest was botany. His personal herbarium contained 6,400 specimens which, with his library, he gave to the Academy. He was president in 1867.[9]

Among the founders who were not doctors was Col. Samuel Stone, a financier who retired from active business in 1852 and devoted himself to the support of cultural and social projects such as the Chicago Historical Society and the Charitable Eye and Ear Infirmary. He was a dabbler in natural science, partly because his wife was a sister of Increase Lapham, a prominent natural scientist of Milwaukee.[10] Another founder was Richard K. Swift, a bank president and financier.[1] Captain Joseph D. Webster, a graduate of Dartmouth College, was another leading citizen who was a founder. He was a member of the United States Topographical Corps for sixteen years and, after resigning in 1854, he did private construction work and held various public offices.[12] Still another businessman was W. H. Zimmerman, an executive in the Great Western Insurance Company.[13]

But the most enthusiastic of the founders, and also the best naturalist, was Robert Kennicott. Although only twenty-one years old, he was an experienced field zoologist and taxonomist. He was born in New Orleans in 1835 and, when still a small boy, was brought by his family to a farm, named The Grove, eighteen miles northwest of Chicago in present Northbrook. His father, an expert horticulturist and physician, was not a strong believer in formal education, thinking that children could learn as much at home from their parents

8. Arno B. Luckhardt, "Edmund Andrews and His 'Oxygen Mixtures,' " *Anesthesia and Analgesia,* Jan.-Feb., 1940, as abstracted by William A. Pusey, *Illinois Medical Journal* (May, 1940), p. 1-6, offprint in CAS Biography File.
9. CAS Minutes, Apr. 11, 1867, p. 48.
10. Mrs. William Barry, "Samuel Stone," Edward G. Mason, ed., *Early Chicago and Illinois,* Chicago Historical Society, *Collections,* v. 4 (1890), p. 130-41.
11. Andreas, *History of Chicago,* index to v. 1.
12. Ibid., indexes to v. 1, 2.
13. Ibid., v. 1, p. 185, 337.

and from contact with the world of nature as they could at school. Since Robert was considered to be in "delicate health" and did not become robust and strong until he was thirteen, he attended school but little. At The Grove Dr. Kennicott—an editor of *Prairie Farmer—had* many visitors, and Robert got to know the "intelligent and refined" people and the "scientific men" who were his father's friends.

Robert himself had an "early inclination" toward the study of nature and was such an eager and thorough observer of the wildlife around The Grove that Dr. Kennicott sent him off to study for a winter with Dr. Jared Kirtland, a well-known naturalist and horticulturist in Cleveland, Ohio.[14] Through Kirtland, Robert became the protege of Spencer Fullerton Baird, then assistant secretary of the Smithsonian, who invited him to come to Washington. Always bubbling with merriment, it was natural that he should found with young William Stimpson the sometimes hilarious Megatherium Club, a small cottage near the museum where impecunious young naturalists lived. Kennicott resided there between 1854 and 1858, while classifying the specimens which he and others had collected. Later Robert kept up a lively correspondence with Baird as he grew in age and experience. One of his first jobs as a professional naturalist was to make a natural history survey of the route of the Illinois Central Railroad from Chicago to Cairo. Through his father's influence, parts of Robert's reports were published in the proceedings of the Illinois State Agricultural Society. Robert uncovered so many new species of snakes, small mammals, and birds that Baird got the United States Patent Office to publish a long paper on the species that were either beneficial or harmful to farm operations.[15] He was certainly the sparkplug of the early Academy of Sciences ; he solicited funds, arranged specimens in the museum, and in other ways worked vigorously to keep the other members interested.

Founded only eleven years after the Smithsonian, the Academy was enthusiastically referred to by Kennicott as "the first

14. "Biography of Robert Kennicot," Chicago Academy of Sciences, *Transactions,* v. 1, Pt. 2 (Chicago, 1869), p. 133ff; Walter B. Hendrickson, "Robert Kennicott, An Early Professional Naturalist in Illinois," Illinois State Academy of Science, *Transactions,* v. 63 (1970), p. 104-06.
15. Kennicott to Baird, The Grove, Oct. 12, 1856, SI.

museum in the West" ! Organized as the Chicago Academy of Natural Sciences in 1857, at some point "Natural" was dropped from the name when it became evident that the whole spectrum of the sciences would be the concern of the organization. In addition to Dr. J. V. S. Blaney as the first president, other officers were Dr. N. S. Davis and Captain J. D. Webster, vice-presidents ; Dr. H. A. John, corresponding secretary ; Dr. Henry Parker, recording secretary ; and Dr. Edmund Andrews, curator and librarian. Standing committees were set up to have charge of different sciences : Robert Kennicott, zoology ; I. A. Lapham, geology ; Dr. Scammon, botany ; Dr. Blaney, chemistry, and Dr. Zimmerman, microscopy and physics. One of the first objectives of the Academy was to establish a museum, and a room was secured, rent free, from the Dearborn Seminary. Soon a collection of several thousand objects was gathered and, as fast as cases were constructed, specimens were put on display. A public appeal for funds to support the Academy was made on the grounds, first, that "the natural sciences would seem particularly fitted to interpret nature in its grandest form, while several of them, such as chemistry, geology, and mechanics relate directly to our economic interests and lie at the foundation of the industrial civilization of our times." Second, it was urged that it would be to the advantage of all the educational institutions in the city to support a single comprehensive museum, rather than for each to try to maintain its own.[16]

About $1500 dollars were raised by public subscription, but much more had been hoped for. Robert Kennicott who, we must not forget, was but a very young man, wrote to his friend, Professor Baird :

> Now then the objects of the S. I. [Smithsonian Institution] are the increase and diffusion of knowledge. What will you do to help us let these "benighted" skunk city folk know that there are some other things of interest in creation than corner lots and railroad stocks, and that there are other things than Greek, Latin, and ancient history to be studied, other views to take care of [in] natural history than, as do the vulgar rabble, [stare] at a "two-armed bear," or a "wooly calf"; other things than five-story marble-fronted houses, "love of bonnets" and exquisite paintings" of nondescript animals and fancy *(very* fancy) other ways of worshipping God beside cheating each other all week

16. "Chicago Academy of Natural Sciences," p. 1.

> and going to (sleep in) church on Sunday; and that there really are " more than a hundred different kinds of bugs and other animals" and so on.
>
> I don't mean to say that the Chicago people are all ignorant of natural science and its results, but as a class they care as little and know as little of such things as any folk I ever heard of that called themselves civilized and enlightened.[17]

Certainly Kennicott must have experienced a high degree of frustration and discouragement when he wrote this letter, but at the same time his thoughts do reflect the attitude of great numbers of people toward science, education, and civilization, not only in Chicago in 1857, but at other times and places in history. His remarks also reflect a common attitude of scientists of the time (and later) that there is nothing more important than science.

Kennicott's argument to Baird was that, if the Smithsonian Institution made contributions to the Chicago museum, it would be an encouragement to those persons who were already supporting the museum financially and who---like Kennicott, Andrews, and others—placed their personal collections in the museum to demonstrate that it was a functioning institution. But Robert Kennicott's immediate interest in the museum was diverted when he accepted a commission to make collections for a natural history museum which the recently founded Northwestern University planned to establish. Also, with the coming of the Civil War, the Academy drifted along, although it did hold regular meetings and added slowly to its library and museum.

In 1859 it was incorporated under a general state law, the legal name now being "The Chicago Academy of Sciences." At this time there were fifty-nine active members and thirty-three corresponding, but not all of the "active" members attended regularly. Among those who participated in the meetings and the work of the museum were Dr. Philo P. Hoy, Increase Lapham (both residents of Wisconsin) , Kennicott, Dr. Andrews, Dr. Franklin **P.** Scammon, and E. B. McCagg. The corresponding members included many of the natural scientists of Illinois, Wisconsin, and a number of friends of Kennicott in Washington.[18]

17. Kennicott to Baird, Chicago, Mar. 10, 1857, SI.
18. The membership is listed in *Constitution, By-Laws and List of Officers and Members of the Chicago, Academy of Sciences* (Chicago, 1859), 14 p. In CAS Archives.

In 1859, meetings began to be held monthly instead of quarterly (later they were held semi-monthly) in the rooms of the Academy, first at the Dearborn Seminary and later at 263 S. Wabash. On July 16, 1860, a field trip was held at Lake Forest, a feature of which was a lecture on botany.

In all this early history we see that the Chicago Academy of Sciences was becoming part of a larger movement in the cities of the United States. Academies of science for centuries had been founded in the urban centers of Europe and Great Britain, and, the first permanent society concerned with science, founded here in 1769, was the American Philosophical Society, with Benjamin Franklin as its promoter. During the early national period, most other Eastern cities had academies of science or natural history societies. As cities grew in the Middle West during the 1830's, 1840's, and 1850's, academies were founded in Cincinnati, Cleveland, St. Louis, Milwaukee, Grand Rapids, Flint, Louisville, and Little Rock. Some of these groups died out before the end of the century, but six of them—the Chicago Academy of Sciences, and those of Milwaukee, St. Louis, Cleveland, Grand Rapids, and Cincinnati—today either themselves or through successor organizations, maintain museums of science and natural history.

The Chicago Academy of Sciences experienced a second founding, and received a new charter in 1865. During the Civil war it lost members and, because of the disturbed state of the nation, meetings became less frequent, and efforts to expand the museum were ineffective. Further, during the years from 1859 to 1863, Robert Kennicott was absent on collecting trips in Illinois, northern Minnesota, and Canada. He spent three of the years in the northern and western parts of the latter country in a region about which little was known concerning its natural resources and wildlife. Through the support of Professor Baird, funds were secured from the Smithsonian Institution and from individual scientists, as well as from members of the Chicago Academy of Sciences and the Chicago Audubon Club, to finance the expedition.[19]

9. Kennicott to Baird, Chicago, Apr. 21, 1859 and Sept. 24, Oct. 24, 25, 1863.

Kennicott came back from Canada in 1862 because of the impending death of his father. After a visit with him, the young man, now twenty-seven years old and a seasoned field zoologist with a national reputation because of the success of his Canadian explorations, went to Washington to unpack and arrange the great quantity of natural history objects he had collected. A considerable part of this material would come to the Chicago Academy, because of the support that Chicagoans had given. He returned to Chicago in 1863, hoping that he would be employed by the Academy to arrange the neglected museum.

Kennicott found that President Frederick Scammon and Curator Edmund Andrews agreed with him that the museum would have to expand if it was to care for the expected additions. At least $3,000 was needed for cases and other equipment, and it was essential that a larger room be found. But Academy leaders did not think that much could be done in the face of the low level of the Academy's activity.

There were, however, other possibilities in Chicago for establishing an important natural history museum. Kennicott found that Chicago University, organized in 1856, and now, in the 1860's, moving ahead under the inspiration of Professor A. H. Mixer, was interested. A number of wealthy Chicago men donated funds, among them Jonathan Young Scammon, a member of the Academy. He gave an observatory to house a great telescope which had been purchased by Chicago citizens under the chairmanship of Scammon. The observatory would be built on the grounds of the University. Professor Mixer invited Kennicott to talk with him about also building a museum on the campus, if the Academy would become affiliated with the new university. If that were done, Mixer would raise $20,000 to equip it, to purchase exhibits, and to employ a curator, who would probably be Kennicott.[20]

But the problems of the Academy and its museum were suddenly solved by George C. Walker, a member of the Academy and a businessman who enjoyed the outdoors. Walker

20. Kennicott to Baird, The Grove, Oct. 25, 1863, SI; Thomas W. Goodspeed, A *History of the University of Chicago: The First Quarter Century* (Chicago, 1916), p. 12; Andreas, *History of Chicago,* v. 1, p. 515-17.

wanted to strengthen the educational opportunities in Chicago and he discussed the possibility of establishing a great museum and research institution that would be the Smithsonian of the West. George C. Walker, who should have more credit than he has ever received as a benefactor of the Chicago Academy of Sciences, was born in Otsego County, New York, on November 5, 1835, and thus was the same age as Kennicott. Presumably the Walker family moved to Chicago sometime in George's boyhood, because it is known that his father, who was a grain merchant, sent his son to Beloit College in 1848 or 1849. After only one year there, George was sent to Kenosha, Wisconsin, as his father's agent. Later George went East and attended Brown University for a time, but he never graduated.

When he returned to Chicago, young Walker found many opportunities for profitable business operations and soon headed his own company which owned grain elevators along the Illinois—and Michigan Canal—at Peoria, La Salle, and other places. He also owned a boat line that operated on the canal. By 1861, when railroads began to replace canals, Walker got into the real estate business in Chicago and made large amounts of money. He was a participant in the affairs of the Chamber of Commerce and the Board of Trade and supported the University of Chicago. He was the founder of the Chicago South Park system, the Morgan Park Preparatory School, the Baptist Theological Seminary, and Morgan Park Library—and he was an incorporator of the Illinois Humane Society. One of his biographers said of him, "Mr. Walker was a masterful man, quick in his decisions, and strong in his convictions, but warm-hearted, cordial, gentle, and considerate." [21]

As a member—and later president, trustee, and treasurer —he had much to say about the operation of the Academy. Kennicott and Walker became good friends, and the latter became an enthusiastic listener to Kennicott's proposals for the future of the Academy. Writing to Baird on November 5, 1863, Kennicott said, "Things is movin'. That is so !"

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11. *National Cyclopedia of American Biography,* v. 22, p. 491-92; Andreas, *History of Chicago,* indexes to v. 2, 3.

Walker proposed to Kennicott that he would advance the money to transport all of the young explorer's Hudson's Bay specimens from Washington. Walker would raise money for an exhibition room and for the preparation of displays by going to wealthy Chicago men and saying that "now we have the contents of a museum, who wants to give $500,000 to set things going right ?" Robert, however, thought it would be better to first create an excellent museum, with " the great Institution to be considered as merely a possibility in the distance. . . . When their mental gullets are stretched by swallowing the museum, we can try 'em with the great Chicago Institution for the Increase and Diffusion of Knowledge ! ! ! !" To achieve the immediate end Kennicott worked out a careful step-by-step procedure for establishing a museum of properly displayed specimens in an adequate building which could later be expanded. His plans also included an endowment to provide for a salaried secretary or director and the continued maintenance of the museum.[22]

The young naturalist's deep interest in the matter of establishing a museum, and eventually a scientific institution, was in part for the furtherance of his own career. While he was promoting the museum in Chicago he was also considering taking up an offer at Harvard's Museum of Comparative Zoology, which Louis Agassiz was building in Cambridge, Massachusetts. If, however, a great museum could be built in Chicago with himself as its head, he preferred to stay in the Middle West. Since his successful exploration in Canada, Kennicott had committed himself to a career as a professional naturalist and he wanted to do what would best insure his future.

Kennicott and Walker continued to carry on their discussion, and Robert said that George was "in a fair way to becoming at least moderately wealthy, and he wished in a year or two to devote part of his time to something pleasanter [such as nature study] than making money." To keep Kennicott in Chicago, Walker gave the former a thousand dollars so that he could proceed with promotional activities.[23]

22. "Suggestions as to what is necessary to secure to Chicago a great scientific museum." Kennicott to Baird, Chicago, Nov. 16, 18, 23, 1863, SI.
23. Kennicott to Baird, Chicago, Nov. 23, 1863, SI.

In January, 1864, Kennicott made a month-long trip to Washington, and when he returned he found that matters relating to the proposed museum were reaching a climax. Professor Mixer of Chicago University made a definite proposal that he would raise $50,000 if the museum were placed there. But Kennicott, Walker, and their friends still felt that it would be better if the Chicago Academy of Sciences went it alone. [24] A second determining factor was the presence in Chicago of Louis Agassiz, probably the most influential scientist in the United States at the time, who had been very succesful in getting funds from the business leaders of Boston to support his Museum of Comparative Anatomy. His opinions were widely accepted by men of wealth.[25]

A meeting of persons interested in the Chicago museum was called in Dr. Edmund Andrews' office, and Agassiz was present. His recommendations were called for, and he responded by pointing out the significance of a cultural and scientific establishment for the future of Chicago as a great city. He also testified to the value of Kennicott's collections and declared that Chicagoans should not let them get away.[26] One of the men present, Edmund Aiken, a banker, proposed that immediate action be taken to raise $50,000. Finding that Agassiz would be back in a few days, Aiken invited him to come to his home where a group of prospective donors would be assembled, and a committee was set up to prepare a subscription list and receive funds.

Aiken's party came off on schedule and generated great enthusiasm. At the meeting a committee with George Walker as chairman was appointed. The members were themselves men of wealth and in positions of leadership, and some of them were amateur naturalists.[27] They were George C. Walker, Horatio G. Loomis, Edmund Aiken, Daniel Thompson, Ezra B. McCagg, Eliphalet W. Blatchford, J. Young Scammon, and William Doggett.

When sufficient funds were in prospect, Kennicott supervised the building of cases and other equipment that would be

24. Kennicott to Baird, Chicago, Feb. 15, 1864, SI.
25. Edward Lurie, *Louis Agassiz, A Life in Science* (Chicago, 1960), p. 212ff.
26. Kennicott to Baird, Chicago, Feb. 15, 1864, SI.
27. Chicago Tribune, Feb. 23, 1864. Clipping in CAS Archives.

needed in the proposed museum. But just as this job was proceeding smoothly, he accepted an offer from the Western Union Telegraph Company to head a surveying expedition to Russian America (Alaska) for the purpose of laying out a route for a telegraph line that would cross the Pacific by way of the Bering Strait and then extend across Siberia to Western Europe.[28] Since it was arranged that he would have a crew that would also collect natural history objects, and that the Chicago Academy would share in the collections, the Academy granted him a leave of absence. He persuaded his friend, William Stimpson, an experienced naturalist who had worked with him at the Smithsonian under Baird's direction and whose specialty was marine shells, to take over the duties of curator.[29]

With this taken care of, Kennicott rushed the work on the museum and got things in such good shape that it opened to the public on January 1, 1865 in rooms in the Metropolitan Building at La Salle and Randolph Streets. Then he left for Washington and New York where he boarded a ship for San Francisco by way of the Isthmus of Panama. From San Francisco he sailed for Alaska on June 1, 1865. He had successfully accomplished the major part of his task when he died of a heart attack on May 13, 1866 at Nulato, on the Yukon River. However, due to the remoteness of the place, the news did not reach Chicago until shortly before the November 13, 1866 meeting of the Academy of Sciences. Kennicott's friend, Walker, the current president, paid tribute to "his strong attachment to the cause of science, and to his zeal and labors in behalf of the Academy. . . . In him the Academy has lost its most ardent supporter—indeed its founder." [30]

As we have noted, the Chicago Academy of Sciences was reorganized under a new charter in 1865, and, in anticipation of raising money and purchasing land for a permanent headquarters, it provided that a board of trustees should be empowered to hold property, receive funds, and appoint the

28. Kennicott to Baird, Chicago, Mar. 4, 1864, SL See also James A. James, *The First Scientific Exploration of Alaska,* Evanston, 1942.
29. Frank C. Baker, "William Stimpson," *Dictionary of American Biography,* v. 18, p. 31-32.
30. CAS Minutes, v. 1, Nov. 13, 1866.

director and curator. The first board of trustees included J. Young Scammon, George C. Walker, Horatio G. Loomis, Daniel Thompson, Edmund Aiken, Ezra McCagg, Eliphalet W. Blatchford, and William Doggett, all of whom were members of the committee that had raised the money for the proposed building. Robert Kennicott was also named a trustee.[31]

The board of trustees continued to look into the matter of acquiring a permanent home and, after considering the gift of a lot on property belonging to the Stephen A. Douglas estate on the South Side, decided that they would seek a suitable place downtown.[32] The need for action was emphasized when a fire in the Metropolitan Block damaged the contents of the museum. Many of the exhibits could be replaced, and the Academy collected $30,000 insurance for the specimens that were lost. From a financial standpoint the Academy was in good condition in spite of the fire. In January, 1867, its assets totaled $74,000, including $19,000 in unpaid pledges, and an annual income from invested capital of $6,500. Eventually all the money pledged was paid except $4,200.[33] With some of its money, the board of trustees purchased a tract of land on Thirtieth Street between Indiana and Prairie Avenues for $35 a front foot and sold it a few weeks later at a profit.[34]

A part of the capital of the Academy was finally used to purchase a lot at the corner of Wabash and Van Buren Streets at $325 a front foot, for a total of $35,000. On the front of the lot was the building that had housed Mercy Hospital. This was renovated and rented for use as a rooming house, and the Academy earned $7,000 a year. On the rear of the lot the museum building was erected. It was as nearly fireproof as the technology of the time permitted. Its masonry walls were two feet thick, and the floors were brick on iron beams. The stairways and the windows were protected by

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31. *Act of Incorporation, Constitution, By-Laws, etc.,* p. 15. Copy in CAS Archives.
32. CAS Minutes, v. 1, Dec. 12, 1865, p. 14.
33. *Ibid.,* v. 1, p. 23-24, Jan. 8, 1867. See list of names and notation of payment or nonpayment in CAS Archives.
34. CAS Board of Trustees Minutes, v. 1, p. 43, 53.
35. Sketch of the Chicago Academy of Sciences, Supplement B of the reminiscences of Eliphalet W. Blatchford. Typescript in Newberry Library, Carbon in CAS Archives.

iron shutters.[35] It was a large structure, fifty by fifty feet and fifty feet high, with a basement for packing, taxidermy, and a heating plant—a first floor with rooms for meetings, a library, the secretary's office, and a dormitory for the secretary's assistants and for visiting scientists. The museum was on the top floor, which had a twenty-eight foot ceiling, and twelve-foot-wide galleries on two opposite sides. The room was lighted by tall windows on three sides.

Between the windows, set into alcoves, were airtight cases for mounted birds and mammals. Eight-foot table cases were placed between the alcoves, each containing twenty-one drawers, and surmounted by glass showcases with dustproof doors. In the center of the room were nineteen tables similarly equipped. On the walls, where there were no windows, were shelves for thousands of glass jars containing specimens preserved in alcohol. At each end of the room were two galleries on the railings of which were shallow glass-topped cases for insects. On the first floor, most of the center of which was taken up by the stairway to the second floor, were mounted specimens of large birds, mammals, reptiles, and fishes, as well as skeletons of the creatures. There was also an attic used for storage. The architect for the building was W. W. Boyington, and the supervisory committee of the board of trustees was composed of George C. Walker, Eliphalet W. Blatchford, and Daniel Thompson.[36]

In design the museum building was much like other museums of the nineteenth century but it was especially influenced by the design and furnishings of the museum of the Smithsonian Institution. Since both Kennicott and Stimpson had worked so often at the Smithsonian, it was to be expected that they would adopt it as a pattern for their museum in Chicago. The use of a high-ceilinged second floor with a gallery was considered so satisfactory that, when the Academy built its present building in Lincoln Park in 1894, a similar plan was used.

The Academy held its first meeting in the new building on

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36. CAS Board of Trustees Minutes, v. 1, p. 98-99; printed letter addressed to Friends and Correspondents of the Chicago Academy of Sciences, Chicago, Oct. 30, 1871, CAS Archives; letters of Simpson to Joseph Henry in Smithsonian Institution.

January 28, 1868, and Stimpson was able to report that the increase in the number of specimens in the museum was "very respectable."[37] In addition to receiving gifts from many sources, the board of trustees appropriated $500 for the support of Ferdinand Bischoff, a naturalist and collector, on his explorations along the Pacific coast of Alaska and Siberia, whose collections were added to the museum. Stimpson contributed specimens from his dredging activities in Lake Michigan, and from expeditions to the coastal waters of Florida, the latter financed by E. W. Blatchford, who was a working member of the parties.[38] Other unusual exhibits were the 400 beautifully mounted birds of the world, given to the museum in honor of Robert Kennicott by the Chicago Audubon Club, and the collection of insects made by Benjamin D. Walsh, the first Illinois State Entomologist.

In 1871 it was estimated that the value of the exhibits was $200,000 and consisted of several thousand individual specimens. It was said that the "building was crammed from cellar to garret with specimens. The want of room for accessions was so strongly felt that the trustees were already discussing the necessity of acquiring a new location, and erecting a larger and more commodius building with ample space for future additions."[39]

Thus the museum was well on its way toward becoming a great exposition of natural history. On the scientific level, in a nineteenth century context, it had made an impressive beginning. William Stimpson was an authority on the taxonomy of marine *mollusca* and *crustacea;* he had the confidence of Joseph Henry and Spencer Baird of the Smithsonian Institution, and they had given him custody of the Smithsonian's holdings in those fields. During the many periods in which he worked in Washington he had often acted as an informal assistant to Baird in museum matters. He had published a number of papers in scientific journals and was preparing a comprehensive work on the shellfish of the world for which borrowed type specimens from world museums

37. CAS Minutes, v. 1, p. 42.
38. Letters of Stimpson to Baird. Originals in Smithsonian Institution. ú, Sketch of CAS.
39. CAS Board of Trustees Minutes, v. 1, p. 19; Blatchford, Sketch of CAS.

were in the Academy.[40] The Academy was also becoming an agency for science education, because the museum was open to the public at regular hours, and many hundreds of people came to see the wonders of nature there assembled.

But the bright future of the museum and the Academy of Sciences was dimmed by the Great Chicago Fire of October 8-10, 1871. The "fireproof" building of the Academy was consumed, with the total loss of the collections and the library. After the fire had burned itself out, Blatchford and Stimpson visited the ruins. Some years later the former wrote :

> I came in town on Thursday morning and found dear Stimpson sitting in my office. The light of his face was gone. Abandon rested upon him, though of his deep personal loss I then little knew. . . . With Stimpson I crossed over to the Academy; no, to its site. Amid the wrecks, it was hard to distinguish our beautiful building. The frame boarding house on Wabash Avenue which regularly paid its $3, 000 annual rental in monthly installments, was all gone. We worked our way through our own blackened, ruined walls onto the Academy premises. The interior was one painful scene of utter destruction. Wrought iron gas pipes were twisted about, mixed with iron rods which had supported the larger mounted specimens of birds, animals, and fish. We could recognize where had been the library, Dr. Stimpson's room, and the alcoves for display of the collections; but all was dark. We trod through ashes, burnt-out coals, broken glass, and remains of the polished metal guards of the beautiful plate-glass cases that had held a few of our choicest specimens. I picked up a key, which Stimpson recognized as belonging to the generous drawer of his table that contained the precious Gulf Stream Log and notes on which he was engaged the afternoon before the Fire...[41]

Blatchford and Stimpson went through the ruins to the basement, hoping to find intact the iron vault that contained Stimpson's manuscript and other valuable material. But said Blatchford,

> We were struck with amazement as we found the iron door of the vault burst open and hanging by its upper hinge. Inside were huge broken blocks of stone, and all else was a blackened mass! The truth flashed upon us. The heavy stone cornice on the northeast corner of the building had fallen and crashed through the vault's roof, a slab of limestone ten inches thick. The fire followed and, fed by the inflammable contents [alcohol in tins] completed the cruel work of destruction. At the right of the door, fallen from its shelf, lay the choicest portion of Stimpson's life work, a blackened pile of carbonized manuscript! I carefully lifted one filmy sheet between my fingers. It fell to pieces. No word was spoken; no hope was in our hearts; its last trace had been ruthlessly taken from us.[42]

40. Blatchford, Sketch of CAS
41. *Ibid.*
42. *Ibid.*

When the initial shock was over, and when the trustees and members of the Academy had made provisions for their own homes and businesses, plans were made for the future. In the generally optimistic spirit of all Chicagoans, the leaders of the Academy announced that the museum would be rebuilt, and that they would welcome the assistance of other institutions. Blatchford and Stimpson prepared a four-page announcement which was printed and circulated to the "Friends and Correspondents" of the Academy, not only to appeal for assistance in rebuilding the collection, but to inform natural scientists in detail of the materials that had been lost, "if for no other reason than to save time which might otherwise be spent in its search."[43]

While the Academy took these steps, yet it was not able to make much progress. The strong hand of William Stimpson was missing. He was discouraged and broken in spirit by the tragic end to his hopes and ambitions. And, what is more, the tuberculosis of the lungs from which he had suffered since early in 1870 was rapidly getting worse. After the fire he was urged to leave Chicago for a time, and he went reluctantly to his home at Ilchester, Maryland, where he died on May 26, 1872.[44]

The board of trustees rebuilt the museum on the rear of the Wabash lot and erected a store building on the front, at a total cost of $90,000. But the amount of insurance carried on the original building was small and, to finance the reconstruction, the trustees borrowed $80,000 at eight percent interest from the Connecticut Mutual Life Insurance Company. The balance was provided by the trustees personally and was secured by a second mortgage.[45] The financial obligation thus incurred was greater than the Academy could meet, because further aid was not forthcoming. After all, there was a real money shortage in Chicago brought about by losses from the fire and the general hard times that began in 1873 and lasted for several years. The trustees were forced to borrow money to pay the interest on the mortgage.[46]

43. CAS Minutes, v. 1, Nov. 14, p. 79.
44. Letters, Stimpson to Baird, SI.
45. CAS Minutes, v. 1, Jan. 9, May 14, 1872, Jan. 14, 1873. See also printed broadsides appealing for assistance in CAS Archives.
46. Treasurer's report signed by Walker in Biography File, CAS Archives.

Nevertheless, the museum was reconstituted by the efforts of Dr. Edmund Andrews and others—but the burden was carried by Dr. Jacob W. Velie, who became the acting curator in 1873. From 1879 to 1896 he was also the secretary (director) of the Academy. He graduated from the Geneva Medical College but practiced dentistry and pharmacy rather than medicine. His personal interests were in ornithology and conchology, although he was an all-around naturalist. He had field experience with Charles C. Parry, a noted botanist and explorer in Colorado in 1864, and in Florida with Stimpson and Blatchford in 1870. As well as being curator and secretary of the Academy, he carried on a business of selling scientific materials, and at one time when the Academy was lower in funds than usual and could not pay his salary, he was allowed to use a room in the basement for business operations. [47]

8,728 specimens had been assembled by 1873. Among items received in the next few years were the ethnological collection of John W. Foster, mounted birds from Professor Baird, and 800 plaster casts of vertebrate fossils from the Ward Scientific Company of Rochester, New York.[48] Further evidence of vigor even in adversity may be inferred from the Library Accessions for 1877:[49]

FOREIGN

The Royal Society, of London.
The Royal Society, of New South Wales.
The Public Library, of Melbourne, Australia.
The Cobden Club.
The Meteorological Office, of Toronto.
The Entomological Society, of Ontario.
The Royal Academy of Mauritius.
The University of Christiania, Norway.
The Royal Danish Society of Science, at Copenhagen.
The Royal Academy of Science, at Amsterdam.
The Society of Sciences, of Holland, at Harlem.
The Imperial Society of Naturalists, of Moscow.
The Natural History Society, of Bamberg.
The National History Association, at Bremen.
The Silesian Society of National Culture, at Breslau.
The Natural History Association, at Brunn.
The Natural History Society "Isis," at Dresden.

47. CAS Board of Trustee Minutes, v. 1, June 21, 1880, p. 218-19. For biographical information about Velie, *see* Andreas, v. 2, p. 431; J. R. Putnam, Memorial Resolution in CAS Minutes, v. 3, Oct. 27, 1908, p. 112.
48. CAS Minutes, 1872-1875, *passim.*
49. Blatchford, E. W. Annual Address, Jan. 22, 1878. CAS, 1878, p. 23-5.

The African Society, at Dresden.
The Physico-Medical Society, at Dresden.
The Royal Academy of Leopold Charles, at Dresden.
The Geological Society, at Dresden.
The Natural History Society, at Danzig.
The Natural History Society, at Emden.
The Natural History Society, at Frankfort-on-the-Main.
The New Society of Natural Science, at Frankfort-on-the-Main.
The Royal Society of Natural Science, at Gottingen.
The Natural History Society, at Halle.
The Natural History Association, at Hamburg.
The Natural History Society, of Schleswig Holstein, at Kiel.
The Physico-economical Society, at Konigsberg.
The Royal Saxon Academy of Sciences, at Leipzig.
The Association of Geologists, at Leipzig.
The Natural History Association, at Luneburg.
The Natural History Society, of Mechlenburg.
The Royal Bavarian Academy, at Munich.
The Royal Hungarian Society of Natural Science, at Pesth.
The Royal Observatory at Prague.
The Royal Bavarian Botanical Society, at Regensburg.
The Zoological-mineralogical Society, at Regensburg.
The Zeitschrift for Entomology, at Stettin.
The Imperial Academy of Natural Sciences, at Vienna.
The Imperial Geological Academy, at Vienna.
The Physico-medical Society, at Wurzburg.
The Royal Academy of the "Lynx," at Rome.
The Royal Lombardie Institute, at Milan.
The Tuscan Society, at Pisa.
The Adriatic Society, at Trieste.
The Royal Observatory, at Madrid.
The National Museum, at Mexico.
The Natural History Society of Neuchatel, at Zurich.
The Society Vaudoise of Natural Sciences, at Lausanne.
The Natural History Society, at Bordeaux.
The Linnean Society, at Bordeaux.
The Society of Natural History, at Cherbourg.
The Society of Natural History, at Toulouse.
The Society of Historical and Natural Sciences of the Yonne, at Auxerre.

AMERICAN

The American Association for the Advancement of Science.
The American Academy of Arts and Sciences.
The Peabody Museum of Archaeology and Ethnology.
The Museum of Comparative Zoology.
The Philadelphia Academy of Natural Sciences.
The Boston Natural History Society.
The Essex Institute.
The Buffalo Academy of Sciences.
The Davenport Academy of Sciences.
The Torrey Botanical Club.
The Natural History Society of Wisconsin, at Milwaukee.
The Smithsonian Institution.
The Zoological Garden, at Philadelphia.
The American Philosophical Society.
The Illinois Museum of Natural History.
The Ann Arbor Scientific Association.
The Illinois State Microscopical Society.
The Wisconsin Academy of Sciences, Arts and Letters.
The Cincinnati Observatory.

The Peabody Institute, at Baltimore.
Silliman's Journal of Arts and Sciences.
The Canadian Naturalist.
The Canadian Entomologist.
The Science Observer.
The Gas-light Journal.
The American Book-seller.
The Pharmacist.
The Prairie Farmer.
The Standard.
The Geological Survey of Ohio.
The Geological Survey of Minnesota.
The Geological Survey of Wisconsin.
The Geological Survey of Michigan.
The Geological Survey of New Hampshire.

Nevertheless the growth of the museum was inhibited by the financial problems. George C. Walker—as president, treasurer, or trustee—worked hard in the years after the fire, even putting in considerable amounts of his own money. He was supported by E. W. Blatchford, J. Y. Scammon, Dr. Edmund Andrews, and others. But Blatchford turned much of his attention to the support of the Newberry Library, Scammon experienced financial losses and Dr. Andrews was not a rich man. Other wealthy supporters were not found until the 1890's. Perhaps the difficulty of attracting members and donors was in part due to the spirit of the times. As a writer in the *Chicago Times* said in 1885,

> Chicago is interested only in meatpacking. It is not a city which devotes itself to public enterprises. Individual effort is conspicuous for its magnitude and daring; but there is not much spent when the result wished for is for the benefit of the whole. Crustaceans and invertebrates are of no use to Chicago. "They can't be exported, packed, rendered, sold for future delivery, made into fertilizers, or stored in an elevator. ".. . Why call Chicago "mean" for not supporting something which it has not possible use for?50

Whether the author was sarcastic or not, Chicagoans did emphasize the making of money ; men who made fortunes let it be known by the extravagance of their houses, the costliness of their art collections, and their ostentatious patronage of the opera. Their houses were showplaces, not comfortable homes, and attendance at the opera was more a matter of social prestige than an expression of interest in music. The University of Chicago closed its doors in 1886 for lack of funds, and even that darling of the rich, the Astronomical

50. CAS Minutes, v. 1, Feb. 12, 1884, p. 298, 304.

Society, had financial difficulties. But in the 1890's Chicago did provide large sums for art, music, history, and education[51]—and the Academy received its share of the benefactions of that decade.

The financial condition of the Academy was such that the insurance company finally foreclosed on its mortgage in 1884, and the Academy had to seek other quarters. Many suggestions were offered : among them to place the collections in a private commercial museum, to join the College of Pharmacy, or to cooperate with the commissioners of Lincoln Park to build a public museum. The first suggestion was manifestly unacceptable, the second financially impossible and, at the moment, legal considerations stood in the way of implementing the third. Consequently it was decided to accept the offer of the managers of the Interstate Exposition Building to place the Academy's exhibits there. The Exposition Building was a semi-permanent wooden structure which had been erected on the lake front a few years earlier and was used for various commercial displays. Rent would be free, and the salary of the curator would be paid.[52]

The move was made in the spring of 1885, but it soon became clear that the conditions in the building were such that the collections could not be well cared for, in spite of the efforts of Dr. Velie, Dr. Andrews, and a few others. The exhibits were subject to grime and smoke, few accessions were made, and the members of the Academy paid little attention to the matter. But, at the same time, the museum attracted popular attention. The *Chicago Times* said that it was "most interesting, instructive, and wonderful."[53]

In 1890, however, the question of what to do about the museum exhibits forced itself on the Academy when it was learned that the Exposition Building was to be razed to make room for the Chicago Art Institute building. After long debate, and thorough consideration of an offer of the reorganized University of Chicago to house the museum,[54] it was

51. Clipping in CAS Archives.
52. Bessie L. Pierce, A *History of Chicago, v.* 3 (Chicago, 1949), *passim.*
53. CAS Minutes, Mar. 10, 1885, p. 317.
54. Clipping in CAS Archives; William K. Higley, *Historical Sketch of the Academy,* Chicago Academy of Sciences, *Special Publication No. 1* (Chicago, 1902).

decided not to settle the matter until the possibility of working out an arrangement with the Lincoln Park commissioners had been explored in depth.[55] The background of this movement lies in the concern of Eliphalet Blatchford that the future of the Academy be assured. He knew that the governing board of Central Park in New York City had successfully cooperated with local private groups which were similar to the Chicago Academy of Sciences. Blatchford had a house guest, Andrew H. Green, the treasurer of Central Park, in fact Blatchford's uncle, Richard M. Blatchford, was the first president of the Board of Commissioners of Central Park. With the assistance of Green, the legal problems were looked into, and Blatchford and his friends approached William C. Goudy, a lawyer who was president of the Lincoln Park Board of Commissioners. Another person who had a voice was Ezra B. McCagg, a member of the Academy and a former trustee, who had just completed a term as president of the Linclon Park Board. It was Blatchford's conviction that, if a favorable arrangement could be worked out, the Academy could find a large donor who would provide a suitable building. Certainly the possibility of a revival of the Academy and the acquisition of a building was known, because the number of members increased greatly in 1892, and the attendance at meetings was large. The Academy set up special sections on microscopy, chemistry, etc., and authorized an elaborate natural history survey of the Chicago area.[56]

The principal question that had to be resolved was whether an agreement made with the park commissioners would be binding on later boards. After deliberation among the lawyers, the Academy trustees were convinced that whatever contract was made would be binding for the future, because the Illinois legislature had been persuaded to pass a satisfactory act empowering public bodies to make such contracts with private groups.[57]

The donor of funds for the building, whose name was not made public until all the negotiations were completed, was

55. CAS Minutes, v. 1, Nov. 10, 1891, p. 407.
56. Blatchford, Sketch of CAS.
57. CAS Minutes, v. 1, p. 410-78, *passic; Chicago Tribune,* July 6, 1892; Chicago Herald, Nov. 26, clippings in CAS Archives.

Matthew Laflin. He approved the contract and agreed to give $75,000.[58] Under the terms of the contract, the Lincoln Park commissioners would provide the ground upon which the Academy would erect a suitable building at its own expense. Construction would begin when the promised gift was in hand. At that time, also, the commissioners would give $25,000 toward the cost of the building. The ownership of the latter would be vested in the Academy, but Lincoln Park would pay the salaries of curator, directors, and assistants, and otherwise contribute to the care of specimens to an amount not to exceed $15,000 annually. Finally, the park commissioners would retain three rooms in the building to use as their offices.[59]

Matthew Laflin, the new donor to the Academy, was a native of Massachusetts who came to Chicago in 1837 with a wagonload of blasting powder from his New England factory (which he later sold to the Dupont family !) for the Illinois-Michigan Canal. He built the Bull's Head Tavern at Madison and Ogden, which had pens for the cattle drovers and was Chicago's first stockyards. His bus-line into downtown Chicago was later purchased by Parmalee, and he also built a resort at Waukesha, Wisconsin, which boasted the longest verandah then in existence. On it, Long John Wentworth, Chicago's mayor, had his own, private rocking-chair ! Matthew's sons, George and Lycurgus, became associated with him, and it was through George that he agreed to give the money. One of the conditions of the gift was that the building should be named the Matthew Laflin Memorial, and it is so designated on the stone entablature over the main entrance. The contacts with the Laflins were made by Eliphalet Blatchford, who had been a schoolmate of George, and had continued his friendship with him. It was Blatchford who made the public announcement of Matthew's gift.[61] George Laflin retained his association with the Academy until his death in 1904, and

58. Higley, *Historical Sketch,* p. 38-39; Resolution on the death of William C. Goudy, CAS Minutes, v. 2, Sept. 26, 1893, p. 27.
59. CAS Minutes, v. 1, p. 478-94.
60. Ibid, v. 1, Dec. 27, 1892, p. 471-77.
61. For biographical information about Laflin see *Chicago Tribune, May* 21 1897, clipping in CAS Archives; *National Cyclopedia of American Biography,* v. 21, p. 275.

provided money for the purchase of cases and other equipment.[62]

The construction of the building proceeded rapidly, once the Laflins approved the plans. They stipulated that it should be classical in construction because it was to be a perpetual memorial. They also wanted to use Lake Superior granite rather than Bedford limestone, but this had to be abandoned because the cost would have far exceeded the $100,000 available, and the architects, Norman S. Patton and Reynolds Fisher, also had to cut the size of the structure for the same reason. They compromised by planning that the building could later be a wing of a larger museum building.[63]

In architectural style the building was described as "Italian Renaissance." It was 132 by 61 feet, three stories high. Broad steps led up to a triple arched doorway. The roof was of red tile. The interior followed the general arrangement of earlier Academy buildings. On the main floor there was an impressive entrance hall where larger mammals were exhibited, and off the hall were museum offices, library, and the Academy lecture room. Stately balustered stairs led to the second floor, which was a single high-ceilinged exhibit room with a balcony on all sides. Cases for insect display were placed on the balcony railing. On the ground floor were service areas, preparation and storage rooms, and the offices of the Lincoln Park commissioners.[64] A. B. Meyer, a German museum director who visited museums in the United States a few years after the Matthew Laflin Memorial was opened, said that it was one of the best small museum buildings he had ever seen, but he felt that everything was on too small a scale, although he recognized that this had been dictated by the amount of money available.[65]

Under the stimulus of the new building and the improved prospects of the Chicago Academy of Sciences, new donors were found. Among them was Albert Dickinson who gave $5,000. This gift and a number of lesser ones made it possible for the Academy to occupy its new home without having "any

62. CAS Board of Trustees Minutes, v. 2, p. 11-12.
63. *Ibid.,* v. 3, p. 27-28.
64. *Ibid.,* v. 2, Mar. 2-July 3, 1893, p. 56-85, *passim.*
65. Higley, *Historical Sketch,* p. 39. There are also pictures of the building at the time of its opening.

encumbrance whatever."[66] In time Dickinson and his family gave the Academy over $250,000.[67]

In 1893 an event occurred which deeply affected the future direction of the Academy. Mr. Edward E. Ayer, who had resigned from the Academy Board on December 21, 1892, congratulating it on securing the building site in Lincoln Park and wishing it well, went to Marshall Field with a proposal that he support a museum to house the collections amassed for the World Columbian Exposition.[69] His offer of undying fame to Chicago's " Merchant Prince" brought the first million dollar donation for the Field Columbian Museum, established in the huge Fine Arts building. The large number of exhibits and the world-wide character of the new museum persuaded the Academy to limit itself to local natural history and science education. It had already undertaken a natural history survey of the Chicago area, beginning in 1892, and this continued to be the sphere of its major activity, although it engaged in significant broad research as well. [70] A list of papers presented in 1896 reveals the range of interest.[71]

REGULAR MEETINGS

January *28—"The Dells of Wisconsin."*.....Mr. H. H. Bennett.
February *25—"The Rise, Development and Progress of the Science of Lichenology*.....Mr. W. W. Calkins.
March *24—"The X Ray."*.....Prof. S. W. Stratton.
April 28—"Acetylene .....Mr. H. F. Fuller.
May *26—"Life and Exploration Within the Polar Regions."* .....Prof. Evelyn B. Baldwin.
June *23—"The Mission of the Geological and Natural History Survey of the Chicago Academy of Sciences."* .....Mr. C. S. Raddin.
August *25—"Preliminary Report on the Mollusca of Chicago."* .....Mr. Frank C. Baker.
October *27—"Observations on Argiope Riparia,."* . Dr. Edward M. Hale.
November *24—"The Results of Recent Arctic Exploration and Plans for American Research."* Prof. Everlyn B. Baldwin.

66. "Studies of the Museums and Kindred Institutions of New York City, etc.," *Report of the Board of Regents of the Smithsonian Institution for 1903* (Washington, 1905), p. 432-37.
67. CAS Minutes, v. 2, July 24, 1894, p. 46.
69. F. J. V. Skiff, "An Historical and Descriptive Account of the Field Columbian Museum," Field Columbian Museum, *Publications,* v. i (1894), p. 1-15; Oliver C. Farrington, "A Brief History of the Field Museum," *Field Museum News,* v. 1, nos. 1, 2, Ded., 1930. See also Ralph W. Dexter, "Putnam's Problems in Popularizing Anthropology," *American Scientist,* v. 54 (1960), p. 315-32.
70. CAS Minutes, Aug. 29, Oct. 23, 1894, p. 48, 53.
71. From Thirty-ninth Annual Report for the year 1896. CAS Jan., 1897, p. 13-14.

December *22—"Recent Occurrences of Rare Birds in Chicago."* ..... Mr. Frank M. Woodruff.
"The Iceberg Period Clays" Prof. Arthur M. Edwards, M.D.

POPULAR LECTURE COURSES

January *9—"Infection and Autoinfection"*..... Dr. John D. Kales.
January 10—"Dust"..... Dr. T. C. Duncan.
January *16—"Cats and the Lands They Inhabit."* ..... Prof. D. G. Elliot, F. R. S. E.
January *17—"Digestion."*..... Dr. L. D. Rogers, A. M.
January *23—"The Ancient Volcanoes of the Yellowstone River."* ..... Prof. Jos. P. Iddings.
January *24—"Wonders of the Human Body."..Dr.* E. R. Mclntyer, B. S.
January *30—"The Development of Artificial Lightning."* ..... Prof. W. M. Stine.
January *31—"Aurora Borealis."*..... Prof. C. C. Haskins, B. S.
February *6—"Nerves and Nerve Cells."* ..... Dr. J. J. M. Angear, A. M.
February *7—"Wonders of the Eye."*..... Dr. C. F. Bassett, A.M.
January 13—"On *the Structure and Natural History of Sharks."*..... Prof. 0. P. Hay, Ph. D.
January *14—"Physics of Animal Life."*..... Dr. J. D. Craig, B. S.
January 20—"Botany."..... Mrs. Nellie Johnson O'Conner.
January 21—"Weather *Forecastings."*..... Prof. E. D. Garriott, B. S.
January *27—"Recent Investigations in Biology."...Mrs.* Elsworth Gross.
January *28—"Evolution of Cells."*..... Prof. L. E. Schoch, B. S.
March *5—"Archaeology of the Vicinity of Chicago; Aboriginal Stone Flaking."* ..... Dr. W. A. Phillips, Ph. D.
March *6—"United States Signal Service."* ..... Dr. S. B. Lumm, B. S.
March 12—"A *Trip to Greenland."*..... Prof. T. C. Chamberlain.
March *13—"Is Man a Biological Evolution of the Fish, or the Son of an Ape."* ..... J J. Tobias, Ph. D.
March *19—"The Doctrine of Spontaneous Generation."* ..... Prof. Winfield Scott Nickerson, B. S., Sc. D.
March *20—"The Blood."*..... Prof. 0. F. Pierce, B. S., A. M.
March *26—"Mountaineering in Mexico"*.... Frank Collins Baker, B. S.
March 27—"The *Nerves."*..... Dr. R. C. Newell, B. S.
April *10—"Zoology."*..... Prof. C. B. Saunders, Sc. D.
October 16—"The *Nerves."*..... Dr. J. J. M. Angear, A. M.
October *23—"The Giants of Mexico: Popacatepetl, Iztaccihuatl and Orizaba."*..... Frank C. Baker, B. S.
October 30—"A *General Talk on Things Relating to the Astronomy of Today."*. Edward E. Barnard, A. M., Dr. Sc.
November *6—"How Plants Make a Living."* ..... Prof. Charles Beach Atwell, Ph. M.
November *13—"Insanity Not a Disease of the Mind."* ..... Dr. J. J. M. Angear, A. M.
November *20—"Rambles About the City of Mexico and Chapultepec."* ..... Frank Collins Baker, B. S.
November *27—"Weather Proverbs."*..... Prof. E. B. Garriott, B. S.
December *4—"Some of the Laws of Physical Development in Children."*..... Dr. Winfield Scott Hall, Ph. D.
December *11—"The Problem of Life."*..... Dr. M. H. Lackersteen.
December *18—"The Power of Thought."*..... Dr. M. H. Lackersteen.

At the same time that the survey was proceeding, the Academy began to put its new building to use. Directing the activities of both the Academy and the museum were William

K. Higley and Frank C. Baker. Higley was born in New York in 1858 and moved to Michigan with his family when he was a boy. He attended the School of Pharmacy of the University of Michigan and, after graduation, went to Wisconsin to teach science at Lake Geneva Seminary from 1881 to 1886. He then came to Northwestern University School of Pharmacy to be Professor of Botany. In 1897 he became secretary of the Academy and served until his death in 1906. He was interested in the popularization of science and edited the magazine *Birds and Nature* for several years. He contributed to the publications of the Academy and saw through the press a number of the bulletins of the natural history survey. He was the author of the very good *Historical Sketch of the Academy*.[72] It was Higley, assisted by Dr. Velie, who supervised the removal of the museum collections from storage to the new building. From his sketch is drawn this list of Officers and Trustees from 1856 to 1900 :

PRESIDENTS

Professor James V. Z. Blaney	1856-1861
Dr. Franklin Scammon	1862-1864
Dr. Edmund Andrews	1865
George C. Walker	1866-1868
Dr. Edmund Andrews	1869-1870
John W. Foster	1871-1873
Dr. Hosmer A. Johnson	1874-1875
Eliphalet W. Blatchford	1876-1878
Henry H. Babcock	1878-1881
William Bross	1882
Dr. Edmund Andrews	1883-1891
Dr. Selim H. Peabody	1892-1894
Charles M. Higginson	1895-1896
Dr. Thomas C. Chamberlin	1897-

SECRETARIES

Major Robert Kennicott	1857-1864
Dr. William Stimpson	1865-1872
There was no secretary from the death of William Stimpson in 1872 to 1876.	
Selim H. Peabody	1876-1878
J. W. Velie	1879-1891
William K. Higley	1892-1894
Frank C. Baker	1895-1897
William K. Higley	1898-

TRUSTEES

J. Young Scammon	1864-1883
George C. Walker	1864-1898
Horatio G. Loomis	1864-1877
Daniel Thompson	1864-1868
Edmund Aiken	1864-1867
Ezra B. McCagg	1864-1883
Eliphalet W. Blatchford	1864-
William C. Doggett	1864-1876
Robert Kennicott	1864-1866
William Stimpson	1867-1872
Edwin H. Sheldon	1868-1891
George H. Rumsey	1873
William C. Egan	1882-1897
Henry W. Fuller	1883
Nathaniel K. Fairbank	1883-1884
Benjamin W. Thomas	1883-1895
Edmund Andrews	1883-1894
Hosmer A. Johnson	1883-1891
Charles M. Higginson	1883-1899
Joseph Frank	1891-1892
James H. McVicker	1891-1892
Edward E. Ayer	1891-1893
John H. Long	1891-1895
Samuel J. Jones	1891-1899
Charles F. Gunther	1891-
Joseph R. Putnam	1892-
Ira J. Greer	1894-
Selim H. Peabody	1895-1896
Lyman J. Gage	1895-1896

72. W. K. Higley, Historical Sketch of the Academy. CAS Special Publication No. 1.

Charles Dickinson	1895-1900
John Wilkinson	1896-
Louis E. Laflin	1896-
Charles S. Raddin	1898-
Charles E. Affeld	1899-
Ira J. Mason	1901-

DIRECTORS

Robert Kennicott	1865-1866
William Stimpson	1866-1872

CURATORS

Edmund Andrews	1856-1863
John M. Woodworth	1862-1863
Robert Kennicott	1864
William Stimpson	1865-1872
J. W. Velie (acting)	1873-1876
Selim H. Peabody	1876-1878
J. W. Velie	1879-1893
Frank C. Baker	1894-

The man who arranged the exhibits was Frank C. Baker, who was appointed curator of the museum in 1894. Baker was a professional scientist and museum worker, having been employed by Ward's Scientific Establishment of Rochester, New York as head of the department of invertebrates. He had come to Chicago as curator of zoology at the Columbian Museum. Baker was born in Warren, Rhode Island, in 1867, attended Brown University for a year, and spent another at the Academy of Natural Sciences of Philadelphia. He was granted a bachelor of science degree by the Chicago School of Science in 1895. He remained at the Chicago Academy until 1915, when he resigned. In 1918 he was named curator of the Natural History Museum of the University of Illinois. He was Curator Emeritus when he died in 1942.[73]

Frank Baker became head of the Academy's museum at a time when great changes were taking place in natural history museums. Until the 1890's museums had been considered mainly as laboratories for natural scientists, and only incidentally as instruments of popular education. Toward the end of the century, however, although still considered as tools of scientists, more emphasis was placed on them as agencies for general education in the natural sciences, especially for children.

Such a movement had already begun in Europe, and to further such changes in museums, a Museums Association had been organized in England in 1889. A similar organization in the United States was the Association of American Museums founded in 1906, and Baker was one of the original members. The new view of what a museum should be was stated by G. Brown Goode, the assistant secretary of the Smithsonian Institution in charge of the National Museum : "The im-

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73. *American Men of Science*, 3d. ed., 1921; Biography File, CAS Archives.

portance of a museum as an agency for the education of the young and for the culture and enlightenment of the public in general is each year becoming better understood." He went on to point out that " control of museums was passing out of the hands of mere caretakers or showmen [and was being] assumed by men of intelligence and enterprise." He declared that museum practice was becoming an art requiring training and experience on the part of curators.[74]

In addition to the writings of Goode, an article of the period which had an influence on the development of museums was "If Public Libraries, Why Not Public Museums?" by Edward S. Morse, a well-known naturalist and museum director. It appeared in the July, 1893, number of *The Atlantic Monthly,* and in it Morse pointed out that the great private natural history collections of a generation earlier were no longer maintained, and so public museums were now necessary. Further, he said, it was no longer enough just to put objects on display. They must tell a story of local natural history, and there must also be objects from other parts of the world so that the viewer could make comparisons. Morse also declared that a museum's collections should be organized to show phylogenetic development of animals and plants.[75]

These precepts were followed by the Chicago Academy under Frank Baker's leadership, and a first class new-model museum was built. Baker was allowed to employ a taxidermist and three other persons to care for the building and the exhibits, although he had considerable difficulty in persuading the Lincoln Park commissioners to appropriate sufficient money for his purposes.

The Academy was especially fortunate in the appointment of Frank M. Woodruff as taxidermist because he was also a qualified naturalist and collector. His special interest was ornithology. He was born in Leavenworth, Kansas, in 1867. Like Robert Kennicott, he was thought to be frail of health as a boy and was allowed to spend much time outdoors. In 1884 his family moved to Deer Park, Maryland, and later

74. "Recent Advances in Museum Methods," Smithsonian Institution, *National Museum Report for 1893,* p. 21-22.
75. Frederick W. Coburn, "Edward Sylvester Morse," *Dictionary of American Biography,* v. 13, p. 242-43.

to Chicago, where Frank attended the Cook County Normal School. In 1892 he assisted in collecting and mounting birds for the Illinois exhibit at the World's Fair and then became associated with the Chicago Academy as taxidermist and assistant curator. He succeeded Baker as director and remained in this position until his death in 1926.[76]

As soon as the Laflin Memorial Building was opened, great amounts of material were given to the museum. Baker reported on April 23, 1895, that over 11,785 specimens were received in the preceding thirty days. Of these, 10,000 were in the extensive collection of invertebrate fossils that had been made by W. C. Egan. The collection was especially rich in Silurian specimens. They were cataloged in 1946, and the catalog was published by the Academy.[77]

As might be expected Woodruff contributed numerous bird specimens. Voluntary gifts did not fulfill all the needs of the Academy and, with money supplied by Lycurgus and George Laflin, Baker toured eastern museums to purchase specimens "to fill the spaces left for them."[78] However, for the next few years gifts averaged over a thousand items a month. In 1907, Baker listed the contents of the museum as containing 8,000 specimens of shells, all arranged in study series to show the range of most American species of land and freshwater shells ; 22,000 specimens of fossils from the Egan collection and others ; 11,000 minerals ; 35,000 insects, including 4,000 beetles ; 4,400 birds and 2,600 bird eggs mostly American and 8,000 plants, mostly local. There was also a collection of 15,000 biological, paleontological, and geological specimens, all carefully labeled with ecological data and systematically arranged from earliest to recent geologic eras.

On the second floor of the museum were vertebrates, from fishes to primates among them were family groups of musk ox, Alaskan moose, peccary, Virginia deer, and Lapland reindeer. A spectacular exhibit that attracted much attention was a complete mammoth skeleton. At one time the skeleton

76. W. F. Worthley, "Frank Morley Woodruff," *The Auk*, v. 43 (1926), p. 577-78.
77. John R. Ball and Katherine F. Greecen, *Catalog of the Egan Collection of Silurian Invertebrate Fossils.* Chicago Academy of Sciences, *Special Publication No. 7* (1946), 55p. A brief biography of Egan is included.
78. CAS Minutes, v. 2, Aug. 27, 1895, p. 91.

of a whale was given to the museum, but there was no satisfactory way to display it, and it was sold for $500.

In the years after 1907 the emphasis was transferred from accumulation of specimens to making the museum more useful as an educational institution, especially for school children. To fulfill this purpose, and at the same time modernize the museum, increasing attention was paid to ecological or "habitat" exhibits. As early as 1903 this work was begun by Frank M. Woodruff, who became director when Baker resigned in 1915. He executed group displays of deer, sheep, California cormorants, mountain lions, peccary, etc., using tinted photographic enlargements from 8 x 10 inch glass negatives as backgrounds, with wax foliage in the foreground. Woodruff ingeniously filled some of the waste space resulting from the third floor balcony by suspending bird and mammal cases continuously in two tiers by steel cables from the vault. These were viewed from the balcony above a long row of oversize Schmidt boxes filled with pinned insects.

For the rest, the mezzanine exhibited rocks, minerals, fossils, and invertebrates in flat-topped cases, poorly illuminated by light from the windows.[79] These cases were surmounted along a central ridge by double-faced light boxes exhibiting hundreds of 8 x 10 glass-plate, hand-tinted transparencies of geology and the natural habitats of the region with emphasis on wildflowers. By modern standards the dull walls and unvarnished oak floors would have given the whole a stodgy look, though it was ahead of its time for museum exhibition as a whole.

An able ornithologist, Woodruff published *Bulletin of the Natural History Survey No. 6, Birds of the Chicago Area,* but it was as a photographer that he excelled. His 260-foot long, hand-colored photomural enlargements of dune, marsh, and forest were ahead of their time and served for fifty years in the Chicago Region Environs groups with retouching while foregrounds were changed twice. Almost total fading required that they be completely repainted within the last few years. His range of interests included an active membership in the

79. Frank C. Baker, *The Chicago Academy of Sciences: Its Past History and Present Collection,* Chicago Academy of Sciences, *Special Publication No.* 2 (1908), 7pp.

Adventurers Club, and he was official photographer for the Chicago Aero Club. The Academy possesses numerous lantern slides of his, including some of the famous air meet in Grant Park in 1911. There is little doubt that he was one of the leaders in museum exhibition in his time.

During this period, Dr. Wallace W. Atwood was secretary (1909 to 1918) and acting director (1912) .[80] An able physiographer and astronomer, he invented the Atwood Celestial Sphere—a rotating globe of 1/64" galvanized iron 15 feet in diameter with an interior platform.[81] Fifteen viewers seated in a circle in darkness obtained a realistic impression of the starry sky over Chicago as banks of incandescent bulbs were seen through tiny perforations drilled in the "skin" to represent five magnitudes of stars. It rotated on an equatorial rail once every eight minutes. The globe was made by Academy President LaVerne Noyes' Aeromotor Company and presented by Mr. Noyes to the Academy. It was a unique forerunner of the modern planetarium. Dr. Atwood left as vice-president of the Academy in 1920 to go to Clark University where he eventually became president.

From 1897 to 1914, the eminent Prof. Thomas C. Chamberlin of the University of Chicago was president, with such prominent honorary curators as Drs. Ellsworth J. Hill, Oliver C. Farrington and Stuart Weller. Dr. Herman S. Pepoon of Lake View High School taught an Academy course in nature study in 1910 that drew crowds of 2000 teachers at Fullerton Hall of the Art Institute ![82] It was in this year that Atwood suggested a 7- or 8-acre bird and wildflower sanctuary in Lincoln Park. In the early 1920's this sanctuary was created at Addison Street and the lake through the joint efforts of Woodruff and Carl Poppe. landscape expert for the Park District. A few years ago it was saved from a group desirous of turning it into an extension of the golf course in part through the efforts of Dr. Beecher.

On July 1, 1927 Alfred M. Bailey became director of the Academy. A graduate of the State University of Iowa, he had just returned from Abyssinia as a member of the Field

80. Bulletin of the Chicago Academy of Sciences, v. 3, nos. 8-10. 1911-1912.
81. Ibid., v. 3, no. 10, pp. 276, 277. Also CAS Bulletin v. 4 no. 2. 1913.
82. CAS Minutes and Bulletins.

Museum Daily News Expedition with Wilfred H. Osgood and the famous bird artist, Louis A. Fuertes. Earlier he had spent several years in the American arctic, particularly at Point Barrow, Alaska, for the U.S. Biological Survey and the Colorado Museum of Natural History. Recalling Kennicott's Alaskan exploits, the Academy had now come full circle.[83]

With the able assistance of a very talented young taxidermist, Earl G. Wright of Delavan, Wisconsin, who came to Chicago on a motorcycle to seek his fortune, he finished the Chicago Environs groups begun by Woodruff. The two large groups they did, using Woodruff's photographic techniques, were a winter scene featuring wolves and bobcats and a habitat group showing the Virginia deer, against a Woodruff background set in the Palos Forest Preserve.[84]

The Academy was an exciting place in the 1930's, and Dr. Beecher remembers the awe with which he first viewed the Woodruff exhibits in 1934. Under Bailey the bird collection continued to grow, a constant flow of skins arriving from his friend, Charles D. Brower, of Point Barrow, Alaska. He often spent part of each day preparing bird skins, his watch before him, trying to beat his own time ! During this period the Northwestern University collection of Robert Kennicott came to the Academy on permanent loan—over 100 bird specimens with numerous mammal skins and reptiles in alcohol. The birds included Carolina parakeets and even passenger pigeons shot by Kennicott on the Northwestern University campus !

Bailey's reputation as a motion picture photographer and lecturer was founded on a hand-cranked 35mm. Shustek camera still in the Academy, though he later moved up to a spring-wound 16mm. Bell and Howell Filmo. Constant companion on his many trips was board member Francis R. Dickinson, who also became an expert photographer and lecturer. One of Bailey's first trips was to the Leiter estate on the Louisiana gulf coast to film seabirds, and in subsequent trips he filmed huge flocks of snow and blue geese on the Paul L. Rainey Wildlife Sanctuary. He also made a filming expedi-

83. Program of Activities of The Chicago Academy of Sciences, v. 1, 1930 to v. 7, 1936.
84. CAS Minutes.

tion to the Dakota lakes to film the white pelican and other marsh birds. In 1930 he organized a filming expedition to Avery Island, Louisiana, accompanied by Dickinson as well as Earl Wright and Edwin Komarek of the staff, as guests of E. A. McIllhenny. The trip was financed by the Chicago Daily News and Francis R. Dickinson. Bailey's films of egrets and other herons were outstanding as were also those of the terns and skimmers later made on the sea islands. Next he visited Colorado and filmed various birds, including the prairie falcon, with his friend, Robert Niedrach of the Colorado Museum. In 1932 he filmed the sea bird colonies of the rocky Gulf of St. Lawrence and Labrador coast. He also made films of local nesting birds in the forest preserves. All were viewed enthusiastically in the Academy lecture hall, a large, wooden-floored room with plain chairs, very noisy to move about !

Under Bailey other photographers were attracted. One who was also an excellent amateur mammalogist was scientific governor Tappan Gregory, a prominent lawyer. His books *Deer at Night in the North Woods* and *Eyes in the Night* placed him in the forefront of those pioneers obtaining flash photos of wild animals at night. Although most of his photos were made at the Huron Mountain Club near Marquette, Michigan, he also made excursions into Mexico into the Carmen Mountains for puma and into Mississippi and Louisiana where he photographed *The Black Wolf of the Tensas* with Francis R. Dickinson and Robert Sturgis. His *Mammals of the Chicago Region* was published in 1936 in the Academy *Program of Activities* series.

Other publications in this series were *Birds of the Region of Point Barrow, Alaska* by Alfred M. Bailey, Charles D. Brower, and Louis D. Bishop, published in 1933 and *Birds of the Chicago Region* by Edward R. Ford, Colin C. Sanborn, and C. Blair Coursen, published in 1934. Single-frame enlargements of birds from the 35mm. film profusely illustrate the *Program of Activities,* as well as newspaper feature and magazine stories. A series of enlargements of birds from all his expeditions, hand-tinted, graced beaverboard panels cut to fit the third-floor windows, so that ceiling drop lights had to be installed to illuminate the Woodruff display cases.

and honorary curator of oology, who was very active in the 1930's and 1940's. Elderly, but full of youthful enthusiasm, he whistled Gilbert and Sullivan as he worked, wrote poetry for R. H. Little's Tribune column, *Line 0' Type or Two,* and published nostalgia about early birding days in Chicago in the *Program* and later the *Chicago Naturalist.* Wallace F. Worthley regularly led early morning Audubon Society bird walks in Lincoln Park. A science teacher for Francis Parker school and tour leader for the Geographic Society of Chicago, he served as assistant secretary of the Academy from 1927 to 34, assistant to the director from 1950 to 51, and lecturer from 1959 to 1967.

The president of the Academy in this period was Lewis C. Walker, an able and faithful administrator. The vice president was Charles Dickinson, younger brother of Albert and Melissa, whose bequests were to help the Academy's financial fortunes so greatly. The secretary was Nathan Davis III, grandson of the original Academy president. Charles Dickinson, like his brother, Albert, was a great philanthropist and also a supporter of early aviation. He was known at all the infant flying fields around Chicago, which he visited in a taxi. Extremely generous to young pilots down on their luck, he also in 1926 financed the first air mail effort, a line between Chicago and Minneapolis. Henry S. Henschen, Eugene H. Garnett, Lloyd A. Laflin, Carroll Sudler, Sr., and Paul Steinbrecher were board members, while such prominent scientists as Orpheus M. Shantz, Henry J. Cox and Prof. Henry C. Cowles were scientific governors. The latter is often called the "father of North American ecology" for his pioneering work in the Indiana Dunes, though the title might go equally well to Dr. F. C. Clements of Nebraska. Dr. Cowles ultimately became president. A notable Bulletin publication of the period was Dr. Herman Pepoon's *Flora of the Chicago Region.*

The entire budget of the Academy in 1928 was $39,000, the salaries for eight employees coming to just over $14,000, including the director's salary of $4,000 !

The Entomological and Illinois Audubon Societies affiliated with the Academy in 1929, and the State Microscopical Society of Illinois, in 1930. On April 28, 1930, the Kennicott Club began to

the basement of the Academy. Founded by field collectors of birds and mammals like Bailey and Wright, it included professional naturalists like Karl P. Schmidt and Albert Frantzen of Field Museum, Prof. Alfred E. Emerson of the University of Chicago, and talented amateurs like lawyers Tappan and Stephen S. Gregory, James S. White, Edward R. Ford, Francis R. Dickinson, bird artist Walter A. Weber, and Waukegan bird bander William I. Lyon.

By late afternoon members would begin to arrive and there was always something of interest to be shown off : a falcon being "manned" by Paul Florian, a pet margay belonging to Earl Wright. After dinner in a restaurant across Clark Street, the informal and jocular meeting would be called, with cigar-smoking members and guests listening to Edmund Heller on Roosevelt in Africa or Wilfred H. Osgood on collecting in Abyssinia. It was a return to the Academy of the 1870's but less formal. A younger set was attached to the Academy consisting of Edwin V. and Roy Komarek, Donald C. Lowrie, James Mooney, Walter Necker, and William Beecher, some of them on the staff with small stipends. Almost all were keen about photography, and the Academy darkroom was in constant use for making prints of expedition photographs or copying natural history books and manuscripts. It was a time of healthful activity. The Academy carried on with its work but it was also a training ground where young naturalists could learn their profession in much the way it was done in Kennicott's day.

The Komareks went into the field in the Great Smoky Mountains in the early 1930's on a very meager stipend, for it was a time of economic depression. Trapping small mammals carefully in the ecological communities outlined by Dr. Stanley Cain's earlier studies, they put together a valuable collection. By the late 1930's they had gone on to higher things, working with Herbert L. Stoddard on the Co-operative Quail Investigation at Thomasville, Georgia.

By 1930 the salary budget had increased to $21,000. The Louisiana field trip was rather generously supported with $500 from the Chicago Daily News and $500 from Francis **R.** Dickinson who also accompanied it in the field. Notable board members in 1930 not mentioned above were Bruce

Borland, Prof. A. C. Noe, and Prof. Fay-Cooper Cole. Notable Life Members were Julius Rosenwald and Mrs. Wayne Chatfield Taylor ; a Contributing Member was Mrs. Lester Armour ; Sustaining Members were Oscar Mayer and Solomon A. Smith. In 1935 Francis R. Dickinson, then Academy president (1933-38) , took up with the Park Board the matter of obtaining funds from the mill tax levied on real estate for the upkeep of museums on park property. Since 1893 the Academy had received a flat $5000 annually in consideration of the presence of the Park District offices in a corner of the Academy Building. Nothing came of it at this time, but a first step had been made.

On May 1, 1936, Alfred M. Bailey resigned to take the directorship of the Colorado Museum in Denver. He was replaced on October 19, 1936 by Dr. Howard K. Gloyd of the University of Michigan.[85] Just as Bailey had been a field collector of birds and mammals, Gloyd was a collector of reptiles and amphibians who organized long collecting and filming expeditions to Arizona. His film programs were also popular. Somewhat reluctantly, he undertook the removal of all the smaller Woodruff habitat groups in the museum, opening up the main exhibit hall clear to the vaulted ceiling and leaving only the large Chicago Region Environs exhibits around its perimeter. It may have been a mistake. The interior architecture thus emphasized was not very attractive, and there were far fewer exhibits, although in fairness, the Woodruff exhibits badly needed repair.

The period between 1938 and 1942 was one of great activity. [86] The Chicago Park District moved out of the rooms at the northeast corner of the first floor, which were remodeled as offices. A printing project under the WPA was turning out popular educational leaflets. The Amateur Herpetologists Club was meeting regularly under Walter Necker, and Earl and Thurston Wright were working on Dunes habitat groups—with Dr. Donald C. Lowrie, spider specialist, carrying on faunistic studies in the field. Dr. Orlando

85. CAS Minutes for May 1, 1936 and Oct. 9, 1936.

86. Program of Activities of The Chicago Academy of Sciences, v. 8, 1938. The Chicago Academy of Sciences. Report of the Director for 1940 and 1941; for 1942, 1943 and 1945.

Park, Northwestern University ecologist and Scientific Governor, served as main consultant. Dr. John R. Ball, Honorary Curator of Geology and Paleontology, and Edward R. Ford, Honorary Curator of Oology, were active, the latter donating his large egg collection and setting up an exhibit. Dr. Anna Pederson Kummer served as Honorary Curator of Botany. In addition to short field trips to the southeast, including the Smoky Mountains, Dr. Gloyd spent a week collecting reptiles in Missouri and a month in southern Texas in 1938. In 1940 four members of the Academy staff spent six week in Arizona collecting and carrying out field investigations. In 1941 Dr. Gloyd spent a further week in Missouri and a month in Arizona as guest of the Boyce Thompson Southwestern Arboretum at Superior. In the years following, scarcely a year went by without a collecting trip to Arizona with the result that Dr. Gloyd accumulated an excellent spirit collection of reptiles and amphibians from the Southwest. Out of it came a number of herpetology papers as well as a major work on the rattlesnakes.

In fact, Dr. Gloyd's outstanding contribution was in publication. The *Bulletin* was augmented by the new series, *Natural History Miscellanea,* for shorter papers. He also launched a popular magazine, *The Chicago Naturalist,* which included excellent articles by local scientists of the sort that formerly appeared in the *Program of Activities*. The publication effort was much helped by Dr. Gloyd's good fortune in hiring a retired printer who handset the type in the Academy printing shop.

Dr. Nathan S. Davis, III, who had served as secretary since 1926 and became president in 1939, was one of its staunchest supporters. A graduate of Harvard and Rush Medical College, he was active in professional organizations and Professor of Medicine at the Northwestern University Medical School, specializing in diseases of the heart and arteries. His grandfather had been one of the Academy's founding members in 1856 and 1857.

Additions to the Board in these years were Hulburd Johnston (1927) , Dr. L. Ellsworth Laflin, grandson of Matthew Laflin (1947) , and Carroll H. Sudler, son of the long-time board member of the same name (1956) . Scientific governors

added were Dr. John R. Ball, Dr. Arthur L. Howland, Dr. William E. Powers, Dr. Ralph 0. Freeland, Dr. C. L. Turner, Dr. Hanford Tiffany and Dr. Orlando Park of Northwestern University, Dr. Alfred E. Emerson and Dr. Charles E. Olmsted of the University of Chicago, and Dr. Max C. Shank of the University of Illinois. With the death on April 20, 1956 of Dr. Davis, Dr. Leslie B. Arey became Academy president on April 10, 1957, the Academy's centennial year. A distinguished professor and author of texts on embryology and developmental anatomy in the Northwestern University Medical School, Dr. Arey continued with the University on a full schedule long after retirement age, while performing his duties as Academy president as well. He had been a vice president since 1947.[87]

During this period the Chicago Park District, which had in 1893 retained three rooms for its own use in the Academy building, gradually relinquished these as park officials moved out. The park lapidary shop floor was re-tiled and became the entomology laboratory of Drs. Camin and Ehrlich in the late 1950's. Special equipment was installed, creating a cold room out of a former vault. Berlese funnels for collecting mites and a phase microscope were purchased partly from contributions by trustees, Henry B. Babson, Lloyd A. Laflin, George J. Leahy, and Carroll H. Sudler.

The Academy was painfully short of money if any sort of ambitious expansion were to be attempted, and Dr. Gloyd presented the Board with a blueprint for additional scientific staff in 1941 that would have required a further $2,500,000 in the endowment fund, from which to draw the necessary annual income. Out of this came Dr. Eliot Williams, a recent ecology student of Dr. Park at Northwestern University as assistant director and Dr. Donald Hatfield of the University of Minnesota as mammalogist. Unfortunately, both were soon to leave on account of the war. A survey by the fundraiser, Marshall McKeown, estimated that an endowment of $3,500,000 (more than 4 times the actual endowment) would be needed to support the Gloyd program and that the new wing for Dickinson Hall would cost about $1.000.000. Thus

87. Biography Files, CAS Archives.

Dr. Gloyd presented a discouraging report in 1949, revealing decreased membership, drop in attendance and loss of affiliates like the Kennicott Club and Microscopical Society. Wallace Worthley, science teacher for Francis Parker School, was hired as fund-raiser. On July 7 he became administrative assistant.

At the meeting on that date a court decision was announced, permitting the Academy to build Albert Dickinson Hall within the present building. Skidmore, Owings and Merrill were allotted $70,000 to remodel the existing hall. The result was a smaller hall with well-spaced theatre seats for 176, with the latest in audiovisual equipment and a sound-proof projection booth. A board room and storage space were created out of the remaining space. The final cost was $85,165, leaving an unexpended balance of $165,818 in the endowment. Albert Dickinson Hall was the most spectacular improvement in years, and the annual Dickinson Lecture became a feature. Monthly lectures on local natural history, except in summer months, were given mostly by scientific governors : Dr. Charles E. Olmsted, Dr. Max Britton, Drs. Powers, Tiffany, Park, etc. [88]

Dr. Joseph H. Camin was added to the staff as curator of invertebrates on July 1, 1952, implementing Dr. Gloyd's master plan of 1941.[89] Dr. Camin, who received his degree as an acarologist from Ohio State University, applied himself to research on the mesostigmatid mites, writing papers and lecturing on the subject at the summer classes conducted by Prof. George W. Wharton at the University of Maryland. In 1956, with help from Dr. Robert W. Hull of Northwestern University, academy secretary, he obtained a $35,000 grant for three years from the National Institutes of Health to carry on studies of mite-borne diseases in snakes. Dr. Paul R. Ehrlich, who obtained his PhD from the University of Kansas in 1955, joined him as an academy associate, his salary paid from the grant. Dr. Ehrlich later became well-known for his book, *The Population Bomb.*

1957 was the Centennial Year of the Academy founding,

88. CAS Minutes.
89. Museum Activities, No. 4, Oct. 24, 1952.

and there was much preparation for the event. A Centennial Committee was appointed with Mr. Hiram L. Kennicott as Chairman. It Included Dr. L. Ellsworth Laflin, John T. McCutcheon, Jr., Dr. Arthur L. Howland, and Dr. Robert W. Hull. Special Publication Number Thirteen commemorated the Centennial Meeting which took place on May 22, 1957.

Officers and Board Members during the Centennial Year were :

President—Dr. Leslie Brainerd Arey
First Vice-President—Carroll H. Sudler, Jr. Second Vice-President—John Thompson Haynes
Secretary—Dr. Robert W. Hull
Treasurer, term of one year, elected by Board of Trustees :
Walter A. Grau
Trustees, elected by Academy:
1. Hiram L. Kennicott, 1953-58
2. Kellogg Fairbank, 1955-58
3. John T. McCutcheon, Jr., 1955-58
4. John P. Wilson, Jr., 1955-58
5. Hulburd Johnston, 1956-59
6. Carroll H. Sudler, Jr., 1956-59
7. Dr. L. Ellsworth Laflin, Jr., 1957-60
8. C. Howard ReQua, Jr., 1957-60
9. Dr. Albert L. Raymond, 1957-60

Honorary Trustees:
1. Henry B. Babson
2. Dr. William F. Henderson
3. Lloyd A. Laflin
4. Carroll H. Sudler

Scientific Governors, elected by Academy :
1. Dr. Ralph 0. Freeland, 1955-58
2. Dr. Arthur L. Howland, 1955-58
3. Dr. Max C. Shank, 1956-59
4. Dr. L. Hanford Tiffany, 1956-59
5. Dr. Everett C. Olson, 1957-60
6. Dr. William E. Powers, 1957-60

The Centennial Meeting included a brief history by Hiram L. Kennicott and an address by Alexander Wetmore, Secretary of the Smithsonian Institution in Washington, in which he referred to the early close connections between the two institutions and contrasted the natural sciences in Kennicott's day with the present.

However, the temporary excitement of finally building Dickinson Hall and of the Centennial Year were only diversions. There had been no real changes in the Academy fortunes, and early in 1958 Dr. Gloyd resigned as director to take a teaching post in the Zoology Department of the University of Arizona at Tucson. His plans for the Academy

had never been implemented for lack of money, and at the time of his resignation a suggestion was made by a group including Drs. Camin, Hull, Ehrlich, and Park to abandon the museum as a popular interpreter of natural history in favor of a research institute mainly supported by government grants. Under this plan Dr. Camin would be director. However, in April of 1958 the board voted to continue with the Academy as before, attempting to maintain a small scientific staff and to carry on with exhibits and educational work as well. In view of the uncertainty of Federal grants, it was a wise decision.

Dr. William J. Beecher was appointed director in May, 1958.[90] Dr. Beecher had obtained his PhD in Zoology from the University of Chicago while with Field Museum, where his thesis involved anatomical study of nearly 1000 species of birds borrowed from world museums over a seven-year period to establish a phylogenetic classification of the sixty families of song birds. However, he was primarily an ecologist. He had also founded the Cook County Forest Preserve District's Little Red Schoolhouse Nature Center, and it was his additional ability as an artist that made it appear feasible to the Board to go on as before.

The Academy budget in 1957, Dr. Gloyd's last full year as director, was $61,443, and the new administration began with no increase in funds. Dr. Beecher personally repainted the Atwood Celestial Sphere as a Globe, at the same time modernizing the exterior lighting.[91] Then he and Thurston Wright, projecting a star chart with 10 large slides, reproduced a black-light exhibit of the starry sky over Chicago, called the Star Dome. This was done to transform the exhibit hall vault, much in need of painting, into a suitable background for the new Globe-planetarium. Rehabilitation turned to the windows of the third floor and of both landings, beaver-boarded over since Bailey's time. The Board voted $14,000 out of capital funds, and the windows were closed with Bedford limestone and brick.[92] Where each of the 31 windows had been, a recessed wall case was constructed. Next, twelve space diora-

90. CAS Minutes.
91. Museum Activities, No. 10, April 5, 1960.
92. *Ibid.,* No. 11, April 14, 1961.

mas were provided for by continuing a half-wall on the third floor mezzanine to the ceiling. These merited a color-illustrated article in the Sun-Times Sunday magazine. Next the lobby was attacked. The cold appearance given by the marble and terrazo was softened by strip-lighted ecology murals. Some of the marble wall space was given over to photo exhibits. With hanging light fixtures removed, the ceiling was changed into a sky filled with painted forms of migrating birds over Chicago during various months of the year.

Meanwhile, to make the museum useful while work was going on, clubs were formed for teachers and students with scientists lecturing before groups in Dickinson Hall on a volunteer basis for the first year, making full use of the Academy's newest asset. Then a National Science Foundation grant of $4200 was obtained to support evening lectures on Tuesdays and Thursdays, covering Biological and Physical Sciences, co-ordinated with Saturday bus field trips. The next year the National Science Foundation grant was for $11,000, and a series of thirty 4-page leaflets called Science Notes was written, illustrated, and composed on a varityper by Beecher. Covering various natural history subjects, these were directed at students and teachers. During the peak years of support by the NSF, the Academy program may have set a record for an institution of its size. As many as 300 teaching hours a year by scientists were offered free to teachers and students, as well as the interested public—in lectures, field trips, summer workshops, etc. For the new director it was an 18-hour day ! Eventually, the lectures and field trips were organized in co-operation with Dr. Muriel Beuschlein of Chicago Teachers College into credit courses for teachers—courses in astronomy, physics, geology, ecology, and archaeology. Drawing top professors from all the local universities, from Argonne and even Urbana, the Academy offered the foremost men of science free to all. After the NSF ceased to support the program, it was carried on with small grants from W. Clement Stone at whose suggestion famous scientists were honored. The Academy had the Karl P. Schmidt and Alfred E. Emerson lectures in zoology and ecology, or the Bretz lectures in geology, or the Braidwood lectures in archaeology, or the Compton or Fermi lectures in high energy physics.

The lectures and field trips have become a permanent fixture, as have the Sunday afternoon travelogs arranged by a committee of the Womens Board and the Saturday afternoon movies. The modern audiovisual capabilities of Dickinson Hall have been taxed to the limit.[93]

A Junior Academy was founded in 1960, headed by Beecher and Dr. Milton Goldstein, a mathematician-physicist. Largely owing to Goldstein's efforts, in the peak three years 20 boys or girls won 4-year scholarships in leading universities, three went to the National Science Fair, 17 to the State Science Fair, and 7 won first place in the City Science Fair. Five were semi-finalists in the Westinghouse Science Talent Search. About this time also Saturday classes in the use of the microscope were inaugurated by the State Microscopical Society of Illinois under its president, Mr. Leon L. Urbain. The Society provided special chairs and tables with electrical connections, microscopes, and microscope spotlights. The Academy had never before known such activity.

In October, 1960, Mr. David R. Lauck, a candidate for the doctorate in the Entomology Department of the University of Illinois, became curator of invertebrates. Continuing his researches on the insect genus *Belostoma,* he published in the *Bulletin* and taught a summer seminar in entomology for high school students. Dr. Beecher continued his anatomical studies on the orders of birds with visits of several days to the American Museum of Natural History in New York and to the Smithsonian Institution in Washington, where large spirit collections of birds are maintained. These studies also appeared in the *Bulletin.* Dr. Beecher and Mr. Lauck made a short trip to Avery Island, Louisiana—earlier visited by Bailey and Dickinson—to study trans-Gulf migration of birds and to collect aquatic Hemiptera. There they were guests of the McIlhenny family and Dr. George H. Lowery, Jr. of Louisiana State University. When Dr. Lauck received his PhD in August, he left to head a new Department of Forest Entomology at Humboldt College in Arcata, California. The Board voted not to fill the post immediately but to devote the money to renovation work.

93. *Ibid.*. No. 11 (series 2) 1961 to 1965.

For now an ambitious program of renovation and exhibition was undertaken by Beecher, first with Thurston Wright, then with George Iannarone, his successor, as curator. Lacking funds for top professional help, they gathered a team of young artists and part-time high school students who learned museology on the job. The old Woodruff cases of rocks and minerals were removed from the balcony, and eight large plywood exhibit blocks were erected from floor to ceiling, each block designed to contain 13 large habitats of the Life Zones of the World. Facing blocks created 9 rooms for the major zoogeographic regions. Backgrounds would be based on 8x10 color transparencies to be reproduced as enlarged, non-fading Cibachrome transparencies with right-angle front surface mirrors so placed as to make each scene appear endless. Accompanied by curator George Iannarone and vice-president Prof. E. Lloyd DuBrul of the University of Illinois Anatomy Department, Dr. Beecher tried out a new 8x10 Deardorf camera in 1965 in the Dry Tortugas, also filming the sooty and noddy terns. This trip, greatly facilitated by Mr. and Mrs. Clarence L. Frederick, who put the party up at their winter home in Marathon afterward, was of particular interest because an Academy field party had visited the Tortugas almost a hundred years previously. Dr. William Stimpson, Academy director, with board member Eliphalet Blatchford, co-operating with Prof. Louis Agassiz of Harvard, launched the Gulf Stream Expedition in 1870 !

In June, 1966 Beecher made a trip with Academy member William Jarvis and student assistant August Pivorunas to the Great Smoky Mountains and a few weeks later, with Jarvis and Iannarone, made a tour of the southwestern, far western, and northwestern national parks.[94] This trip included a visit to the San Francisco Mountains of Arizona where Dr. C. Hart Merriam made the original studies leading to the idea of the Life Zones on which future academy exhibits were to be based. At Flagstaff the party was guided by Mr. William Breed of the Research Center and Museum, another arrangement made by the Fredericks ! In the fall of the same year Beecher was off to Africa.

94. *Ibid.,* No. 16, 1966 to 1970.

With visions of a permanent exhibit of prize-winning nature photographs, enlarged 5 to 8 times from 35-mm. color transparencies, Dr. Beecher obtained a donation of $10,000 for the Myrtle R. Walgreen Exhibit of Nature Photography, part of the money to be spent on Mrs. Walgreen's own excellent time series of insects and plants, part in exhibiting the work of others. Since there would be a running series of transparencies all around the mezzanine, in the aluminum frame already prepared, and since each Life Zone group had room for half-a-dozen, the number of transparencies eventually would mount up to many hundreds. The Woodruff photographic tradition was being perpetuated and up-dated !

The ugly staircase to the attic store-rooms needed hiding, and Beecher, with the aid of Lyman Carpenter (curator while Iannarone was in Service) built a Stone Age painted cave around it. In a two week trip to France, Beecher visited the major caves and reproduced the art of a dozen of them on the prepared walls of the Cave Room by projecting slides and copying them exactly. Dioramas of Neanderthal and Cromagnon Man and their industries were done, with sculpture by Dennis Kowalsky and Beecher.

The need to secure 8x10 transparencies for the Life Zone groups sent Beecher on periodic whirlwind tours, including three to Africa with the Jeffrey R. Shorts of the Academy Boards—on one of which the 8x10 camera was carried on a five-day climb of Mt. Ruwenzori. A month's trip to Europe, begun in the Camargue in Southern France, included a stay on Port Cros in the Hyeres near the Riviera to photograph the Mediterranean forest. Then he visited the Taurus Mountains of Turkey for the Cedars of Lebanon, Switzerland for the Alps, Poland for the Bialowieza forest, Russia for the Streletsk Steppe and the taiga, ending up in the Swedish mountains on the Norwegian frontier for tundra. There was also a two-week trip to Japan and Hawaii. Beecher personally financed part of these trips, but $2500 from the R. E. Sturtevants and $10,000 from Sydney Stein, Jr. for field expenses of Iannarone and Beecher on the Sydney Stein, Jr. Chicago Academy of Sciences Expedition to East Africa in 1970 were very helpful. Through Mrs. Walter C. Paepcke, eight members of the Galapagos Expedition in 1970 paid

passage as guide ! In 1969 a memorial fund of $20,000 was established for the young naturalist, Phelps C. Kelley, by his family. His parents, General Charles C. Haffner and Mary Cotton Haffner, his brother, Brooks Mather Kelley and sister, Cynthis Kelley Bumstead (through the Stonebridge Foundation) each contributed $5000. $10,000 of this was to be used for the Phelps C. Kelley Conservation Room on the third floor, to bring the extinct passenger pigeon and Carolina parakeet to life in black-lighted models, and $10,000 was set aside as a fund from which income for travel may be drawn.

Another black-lighted exhibit will be the Walter C. Erman Rain Forest Room for which Mr. Erman is contributing $10,000. The room is to be a blend of sculpture and fluorescent-painted walls and ceiling with plastic foliage. It is to give an impression of a tropical forest, replete with strangler fig, hanging lianas with orchids, and a huge boa, combined with models of parrots, toucans, and spider monkeys—with sound effects !

A third black-lighted room will be the $10,000 Ace C. Fessenden Coral Reef Room in which the outstanding feature is a large tiger shark, modelled by Iris Nedas under Dr. Beecher's direction with numerous reef fish hanging in midair beneath a ceiling painted as the water's surface seen from beneath. The walls will be decorated with out-jutting masses of coral.

The black bear habitat group, constructed by Thurston Wright in the lobby in the 1930's was removed and a Book Shop created in the center of the floor as a service to visitors. The bear group was replaced by a $28,000 exhibit donated in memory of her father by Elsie Mayer Steuer, $5000 of this coming from her daughter's family (Friedman Foundation) . The Oscar F. Mayer Alcove of Primeval Chicago is a walk-in replica of a Carboniferous Coal Forest in which the trees were made of fibreglas, while a large color transparency and numerous mirrors give the impression that the small space is huge. The outer walls of the alcove depict the geology of the region and the life of Thornton Reef 400 million years ago. A phylogenetic tree of life on earth completes the outer wall exhibits, set in plaster, cast and painted to imitate real rock, studded with replicas of classical fossils.

Next a $25,000 exhibit was completed on the stair-landing leading to the main hall—The Exhibit of the Great Lakes. In it the whole ecology and geology of land and water are covered in 5 large relief maps, two large cases of fish, and 13 ceiling and wall murals. These depict both the original and polluted lakes and the reasons for deterioration.

The main exhibit hall—the Hall of the Great Lakes—has seen a complete reinstallation of the Chicago Environs Groups —the Dunes, Calumet Marsh, Deer Group, Wolf and Bobcat Group, and Mountain Lion Group. Faded photographic backgrounds were completely repainted by Dr. Beecher with help from Richard Pearson, Susan Kopp, Theodor Bechnik, Arnold Slettebak, and others. A special technique was also used of painting shadows on the ground and on every plant or animal in the group, shadows congruent with a fixed sun position, giving extraordinary realism. Highlights on old specimens of ducks and geese were also brightened using dull-finish casein paints, compatible with the chalky bloom natural to feathers of most wildfowl. The old plaster columns were all turned into trees to form the Tree Walk donated by the Service Club of Chicago ($5000) . Real trees were painted with latex to obtain rubber molds for casting in plaster. Artist Dennis Kowalsky did most of the work under Beecher's direction. The labels are zinc cuts reversed and deep-etched, then painted over with simulated wood grain by artist Theodor Bechnik. An additional $3500 gift from the Service Club of Chicago is for the new Lake Forest and Spruce-Fir Habitat Groups, extending the concept of the Chicago Environs groups to encompass the Great Lakes Region.

The final hall, which is nearing completion, consists of a fibre-glass landscape occupying almost the entire floor—a walk-in canyon with simulated rock walls four feet high with 30 glass cases in the walls, depicting the birds, insects, plants, etc. of the Great Lakes Region. The rocks will be accurately cast to represent a section through the LaSalle anticline, the major bed-rock feature of northern Illinois, prepared by Dr. Beecher in consultation with Dean Laurence H. Nobles, Northwestern University geology professor and Academy secretary. Sections of the rock wall will be real with actual fossils, the aim being to create a geological-ecological exhibit

in which much of the material is not behind glass—a learning experience geared to the needs of modern teachers and students in the present environmental crisis.

A walk-through cave with several large transparency vistas inside depicting local canyon scenes is built under the globe-planetarium and serves as the entrance to the canyon. Outside it is decorated by fiberglas rocks replicating Niagara limestone overlain by glacial drift, out of which a jumble of moss-covered tree trunks create a habitat for fox, bobcat, wolverine, bear, raccoon—none of them behind glass. A loft for a movie projector is included, and 5-minute ecology and geology films will be projected the length of the hall, to be viewed by student groups sitting on a rail fence contributed by the A. C. Fessendens of St. Charles. The fence runs entirely around the hall six feet in from the peripheral Environs Exhibits, entirely enclosing the canyon exhibit so that access is only at either end. The visitor walks on astroturf which is a very good imitation of closely-cropped grass while, inside the fence, plastic natural vegetation, animals, and birds are seen by but not accessible to the public.

Dr. Beecher, believing the Academy should adopt the role of informing the public about happenings in nature, early established good rapport with the press, which resulted in numerous color-illustrated articles about safaris and field trips as well as about endangered bogs, forests, and prairies. This resulted in his being honored for the Academy program by Who's Who in the Midwest, Adult Education Council of Greater Chicago, Nature Conservancy, Nature Preserves Commission, and other groups. At one time the Open Lands Project was under the tax umbrella of the Academy while waiting for its tax status to be settled. The Academy played a major role in saving Goose Lake Prairie, Volo Bog, Beall Woods and the Indiana Dunes, and in fighting environmental pollution and pesticides. At least once it lost a large potential contribution by taking a firm stand against DDT !

Two who applauded the work of the Academy were old friends of Dr. Beecher, the naturalist brothers, Tappan and Stephen Strong Gregory, both prominent Chicagoans. Tappan, a former scientific governor of the Academy, gave his mammal collection, valued at $1500, to the Academy in 1961, while

Stephen Gregory gave his excellent bird collection, valued at over $5000. This collection contained a number of rare specimens of ivory-billed woodpecker, Carolina parrakeets, and passenger pigeons.

In fulfillment of the obligation of the Academy to promote and diffuse scientific knowledge, it has maintained with some interruptions several publication series for original scientific papers. This effort was begun in 1866 when a volume of *Proceedings* was issued in parts. It contained a description of invertebrate fossils by F. B. Meek and A. H. Worthen. The latter was the State Geologist of Illinois and Meek was a paleontologist who worked for the Smithsonian Institution and for several geological surveys. There were also two short papers on crustacea, one by Theodore Gill and another by William Stimpson. All of the contributions were typical of the scholarly treatises on natural history in the nineteenth century.

In the busy days of Stimpson's directorial tenure, the Academy issued the first volumes of its *Transactions.* Volume I was in two parts (bound in separate books) , the first part appearing in 1868. There were five articles : (1) a reprint of a paper done in 1860-1861 by J. H. McChesney, a geologist associated with the Illinois State Geological Survey ; (2) a short paper on the climate of the Great Lakes by I. A. Lapham ; (3) a fifty-three page account by F. B. Meek of the geology of the valley of the MacKenzie River with figures and descriptions of fossils of that region ; The type specimens were chiefly collected by Robert Kennicott and were deposited in the Smithsonian Museum ; (4) a minor article describing two new fossils ; (5) a section that was titled *Illustrations of North American Birds in the Museum of the Chicago Academy of Sciences,* described the birds, but the illustrations were not completed in time and were therefore contained in Part II of volume I. The colored plates were done in Washington under Professor Baird's supervision. It was Stimpson's idea that the Chicago Academy would gain prestige among scientific organizations for its publications by including the plates, and he persuaded Walker, McCagg, Thompson, and Blatchford to contribute a total of $600 for drawing the figures, for making colored lithographic plates, and for printing. There were

many delays, and the volume was not distributed until January 9, 1870.

In a sense Part II of the first volume of the *Transactions* was a memorial to Robert Kennicott because it contained a full-length biography of the young explorer prepared by a committee of the Academy (Stimpson, Andrews, Blaney, and Jewell) , with Baird as consultant. However, Stimpson did most of the writing. A major part of the biography was a lengthy extract from Kennicott's journal of his expedition into upper Canada in 1859-1862. This account is a first-class job of nature reporting and deserves to be more widely known. Also in the *Transactions* were articles by W. H. Dall and H. M. Bannister, two of Kennicott's associates on the Alaska venture, on the birds of Alaska. Only one number of the second volume of the *Transactions* appeared, printed as a separate, and it was an important paper by Dr. Andrews, "The North American Lakes Considered as a Chronometer of Post-Glacial Times." Because extra copies of the *Transactions* were lost in the fire of 1871, these volumes are rare today.

We have seen that the Great Fire disrupted the activities of the Academy, and it was not until the 1880's that a series of publications called *The Bulletin* was begun. Separate numbers were issued, mostly the result of original investigations. For example, Dr. Andrews, who was a competent amateur geologist, wrote *Glacial Markings of Unusual Forms in the Laurentian Hills, N. S.* Davis Jr., and F. L. Rice, *List of Batrachia and Reptilia in Illinois,* and Leander Stone, *The Artesian Wells of Chicago.* Volume I of *The Bulletin* (18831886) contained ten numbers totaling 127 pages. Volume II (1891-1901) had four numbers, the longest of which (168 pages) was by William K. Higley and C. S. Raddin, *The Flora of Cook County, Illinois and a Part of Lake County, Indiana.* The other articles (62 pages) were monographs on various aspects of malacology. Under *The Bulletin* masthead, from 1908 to 1913, were published various pamphlets containing annual reports, constitutions, and bylaws, and announcements of Academy activities. Volume IV (1913) had only two articles : one told how to make bird houses, and the other described the Atwood Celestial Sphere. *The Bulletin* was suspended until 1934, when it was revived as a vehicle

for the reports of the scientific research of staff members.

One of the most important series of publications was the *Bulletin of the Natural History Survey,* which was the product of the efforts of the Academy to supply basic information on the natural history of the Chicago area. Experts, some of them attached to the universities and schools of Chicago, wrote these volumes, and for many years they were the most reliable works on their subjects. All eight volumes were adequately illustrated. They dealt with geology and paleontology, malacology, botany, and ornithology. The most popular was Woodruff's *The Birds of the Chicago Area* (1907) , 221 pages.

Another important series was *Special Publications,* generally longer works written by members about their personal natural history activities. Still another series of short papers was *Natural History Miscellanea,* open to all scientists, professional and amateur. Many numbers dealt with taxonomy and introduced new species. The Academy also published a number of reports, its constitution and bylaws, programs, speeches given at special events, and other occasional material.

Members of the early Chicago Academy of Sciences and their friends supported the museum and the publication program with their money, because they were helping to " increase and diffuse scientific knowledge," and in doing so were performing a public service. At the same time, for many members, there was personal attraction in the semimonthly meetings, where they had an opportunity to exchange experiences with other science enthusiasts, and to listen to fellow members who were experts on some subject. Often they also had a chance to hear distinguished outside speakers as well. We have no record of the meetings from the founding to 1866, but from then to 1900 there are more or less complete minutes of meetings and summaries of papers delivered, along with comments from the audience.

A typical meeting began with the reading of the minutes, followed by the report of the treasurer. Correspondence that had been received was presented by the secretary, recent acquisitions were reported on by the librarian, and specimens that had been placed in the museum were detailed by the curator. After the reorganization in 1865, much of the busi-

ness was handled by the board of trustees, and only very important questions were taken up at meetings. Consequently the major part of the evening was given over to the speaker, who usually read a prepared paper.

Over 300 papers were given in the period from 1866 to 1900, and it is impossible to describe them in detail, but some ideas about them can be gained from the following representative selection from the period 1875-1885:

Speaker	Title of Paper or Lecture
Amos Sawyer	How the Forests have encroached on the Prairies of Illinois
William Bross	Propagation of Food Fishes in Fresh Water
Prof. W. D. Gunning	A New Mode of Study of Ethnology
E. W. Nelson	Some Fishes New to Science
— — —	The Blue Ray
William Bross	Archeological Findings at Morris, Ill.
H. N. Rust	Prehistoric Graves Near Nashville, Tenn.
Dr. Ransom Dexter	Science and Religion
C. Worthington	Local Entomology
Prof. Bastin	The Lower Forms of Life
W. H. Ballou	Breeding Habits of the Common Eel
— — Hough	The Planet Jupiter
Rev. J. D. Wilson	The Formation of River Deltas
Dr. H. A. Johnson	Microscopic Fossils in Boulder Drift
Prof. J. N. Long	Some Analysis of Lake Water
Leander Stone	Artesian Wells of Chicago

These titles and those of papers given at other times indicate that many of the addresses were presented by men in academic life, that practicing geologists were contributors, that qualified amateurs, including physicians, were frequently on the program, that most of the papers were surveys or reports rather than the results of original research, and finally, that some papers were descriptions of startling or unusual phenomena.

The Chicago Academy was fortunate because it was in a large city where numerous educational institutions were located. Northwestern University and Lind University (later Lake Forest College) were established in 1851, and the University of Chicago in 1859. By the 1890's the former were flourishing, with Northwestern not only giving the traditional liberal arts subjects, but establishing science departments, and attracting competent researchers. The University of Chicago began its modern career, with Rockefeller millions permitting the creation of important science departments. It provided the Academy with such famous presidents as Prof.

Thomas C. Chamberlin, internationally known as the organizer of the entire study of North America's glacial history,[95] and Prof. Henry C. Cowles, pioneer in the ecology of the Lake Michigan sand dunes.[96] High schools and teachers colleges also had highly competent science instructors, and many of the teachers and professors were members of the Academy Board or could be called on to give public programs.

Another organization whose professional staff members were associated with the Academy was Dearborn Observatory, of which Truman Henry Stafford, graduate of Harvard University, was the first director.[97] Some of his early work on stellar nebulae was reported to the Academy. A later director, George E. Hale, who was instrumental in building Yerkes Observatory at Lake Geneva for the University of Chicago, addressed the Academy on one of his important discoveries, the phenomenon of a light streak on the sun which was brought out by solar photographs.[98]

Staff members of the medical schools and the College of Pharmacy were frequent speakers. Professor M. Delafontaine, Professor of Chemistry at the latter institution, addressed the Academy on geological and chemical subjects. In 1871 he gave a lecture on "Darwinism," but what his position was on this controversial subject is not given in the record. At a time when Chicago was considering whether to use Lake Michigan as a source for the city's water supply or to drill artesian wells, Professor Delafontaine gave papers on the subject, advocating the use of artesian water, thus putting himself on the losing side of the controversy. Other doctors and teachers at the medical schools also gave papers. Dr. Norman Bridge is representative of those physicians who had a serious interest in natural history as an avocation. In 1869 and 1870 he reported to the Academy on the study of a mastodon skeleton and on another occasion he gave a paper

95. John C. Merriam, "Thomas Crowder Chamberlin," *Dictionary of American Biography,* v. 3, p. 15.
96. Paul B. Sears, "Henry Chandler Cowles," *Dictionary of American Biography,* v. 22. p. 127.
97. John M. Poor, Truman Henry Safford, *Dictionary of American Biography,* v. 16, 287-88.
98. Walter S. Adams, "George Ellery Hale," *Dictionary of American Biography,* v. 22, p. 270.

on a Peruvian mummy. Dr. Andrews also gave several papers based on his personal study of archaeology, geology, and other subjects.

Microscopic studies were popular in the nineteenth century, and physicians gave such papers as that delivered by Dr. Hosmer A. Johnson, "Microscopic Fossils in Boulder Drift." As the science of bacteriology developed, papers like that given by Dr. Leslie Curtis, "Biological Examination of Water" were presented. There was so much interest in the microscope and its revelation of the miniscule world, that members of the Academy, with some other persons, formed the Chicago Microscopical Society in 1868, and affiliated with the Illinois Microscopical Society.

Other members of the Academy than the physcians gave papers, many of which reflected the interest of the speakers in local natural history. Amateurs frequently gave papers describing the materials they collected, or on subjects upon which they had done some personal research. Representative of them was John W. Foster, a geologist, and later an executive of the Illinois Central Railroad. He was an active member and served as president of the Academy.[99] Foster became interested in archaeology and spoke to the Academy several times on this and other subjects he investigated. Local problems involving science, such as the water supply and the structure of buildings, were also subjects of reports by members.

Some of the papers presented to the Academy meetings were concerned with larger matters, as for example, evolution, uniform weights and measures, the adulteration of food, and the causes of glaciation. Some papers were largely travel talks such as that of John Hobbs, "A Trip through Mexico." A regular attendant at the meetings would have found much satisfaction for his curiosity, and at the same time his interest in particular subjects would have been aroused. In the twentieth century, while bi-weekly meetings were discontinued, lecture series and travel talks have increased to culminate with the great activity described above under the present director.

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99. *National Cyclopedia of American Biography,* v. 10, p. 169-70.

One cannot fail to be impressed by the fact that the officers of the Academy down through the years have been the most prominent professional and scientific people of their times, some of them giants. Of the founding members we have already seen ample on that score. In the middle years the famous Prof. Thomas C. Chamberlin of the University of Chicago, Academy president from 1897 to 1914, was one of the most influential cosmologists and geologists of his time co-ordinating the bed-rock and glacial geology of the U.S. Geological Survey for Wisconsin and Illinois. Prof. John M. Coulter, well-known botanist of the University of Chicago, was president from 1917 to 1921, and Prof. Henry C. Cowles, botanist and physiographic ecologist, served from 1922 to 1933. Dr. Nathan S. Davis, III, president from 1938 to 1956 and Prof. Leslie B. Arey, from 1957 to the present, stand among the most eminent staff members of the Northwestern University Medical School. On the board of scientific governors from the University of Chicago were men like Prof. Stuart Weller, the paleontologist, the zoologist Prof. Alfred E. Emerson, the anthropologist Prof. Fay-Cooper Cole, or the botanist, Prof. Charles E. Olmsted, who inherited the mantle of Cowles. We have previously mentioned Profs. Powers, Howell, Turner, Park, and Tiffany of Northwestern. There were also Dr. Henry J. Cox, meteorologist and Dr. Verne 0. Graham, botanist. Among the trustees were Carroll H. Sudler, both father and son ; the Laflins, George, Louis E. , Lloyd, and Dr. Louis Ellsworth, in succession ; Henry B. Babson, Eugene H. Garnett, Dr. William F. Henderson, Hulburd Johnston, Burt A. Massee, John Nash Ott, and many others.

Nancy Boruch[100] points out that the early Academy was able to surmount great difficulties, such as two devastating fires and the untimely death of its first two directors as well as economic depressions that always arrived when its fortunes were low. Academies or scientific societies were founded in Cincinnati, Cleveland, St. Louis and Louisville, but only the St. Louis Academy continues today under its original name.

100. Boruch, Nancy Braund. The Chicago Academy of Sciences, 1856-1894; The Historical Development of a Successful Scientific Society. Seminar Paper, History Department. Northwestern University. 38 pp.

Kennicott referred to the Chicago Academy as "the first museum in the west" and there is no doubt that a vigorously growing Chicago wished to emulate the eastern cities culturally. Thus, except in the hardest of times, the Academy—with its prestigious collections and obvious partnership with the Smithsonian—could count on the support of professional people and some of the wealthy. There was popular interest in science, too, and the Academy provided real educational opportunities for the amateur, with its collections and lectures, with its encouragement to affiliate societies. It was an age of talented amateurs and a physician might frequently be a lepidopterist or botanist also. Its steadfast refusal to become part of a larger institution and thus lose its independence, was important to its survival. The strong early connections with the Smithsonian through Kennicott and Stimpson raised it above the provincial level, and the duplicate specimens from Washington made its collections of world importance.

The Academy financial picture has begun to improve. In 1963 Dr. Beecher asked Mrs. C. L. Frederick to form a Women's Board which has brought into the Academy directly and indirectly a total of $72,788 in contributions. Contributions by Men's Board members and others for a similar period amounted to $48,083, and there was a gift from an anonymous donor of $30,000. In 1961, with Board Member Gerhardt Meyne, Beecher went to the Chicago Park District to try to get the Academy share of the tax levy increased. They were successful in getting it raised from 3 percent to 3.9 percent. The levy, which a board member in 1941 opposed in favor of continuing to receive the $5,000 annual payment from the Chicago Park District begun in 1893, is at this writing $118,525 annually ! The Board made the wise decision in the best interest of the Academy and could generally be counted on to do so. An outstanding exception was the decision in 1917 by the Scientific Governors to transfer the entire library holdings, accumulated subsequent to the Great Fire in 1871, to the John Crerar Library under a "gentlemen's agreement." This provided that the Academy was thereafter to turn over to the Crerar Library many serials, both domestic and foreign, received in exchange for the Academy's scientific publications and that the Crerar Library was to pay the

Academy one-half the value to the Library of items received in exchange, provided the Academy would use these funds to continue publications. The arrangement seriously handicapped three succeeding directors for lack of basic reference books no longer available, but the losses have been largely made up. With the deaths of old friends of the Academy, large libraries have been received, particularly in the last ten years, those of Carroll H. Sudler, Sr., of John E. Coe, and of the Howe and Bebb families, for instance.

Even that decision was undoubtedly made in good faith. With never quite enough money, the Academy wavered once or twice in indecision. Should it be a scientific institution or an educational one ? In the end it correctly decided to be both, for no educational institution in science speaks with authority without a scientific staff. One can think only with gratitude of the succession of board members and staff members down through the years. For, if a great institution has a life of its own that survives beyond the normal human years, it is equally true that it is only people with faith in its purposes who give it that life.

Everyone remembers the story of the old man who, asked to relate the most important accomplishment of his life, said : "I survived !" Looking back the rocky road of history and reading the now faded minutes of each meeting, one is aware of the devotion of those men. Working under financial difficulties through good times and lean, they have always managed to do their very best for the institution which, through them, has survived in the pursuit of its high purpose in the service of science. Today, when it is needed as never before as interpreter of the environment to an over-crowded Chicago, it stands, stronger than ever, on the threshold of its greatest period.

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Walter B. Hendrickson has his PhD. in history from Harvard and has been Professor Emeritus in history at MacMurray College since 1968. Grants from the college, the American History Research Center and the National Science Foundation supported his study of the Academy history which he completed to about 1930. Among his sources are the Academy archives, including manuscript minutes, biographical files and complete xerox copies of correspondence of early Academy directors with the Smithsonian Institution, supplied by the Smithsonian. Local histories, such as A. T. Andreas, *History of Chicago,* and biographical sources, such as *nary of American Biography,* were also used. Dr. Hendrickson also studied other academies of science in the Middle West, is the author of *David Dale Owen, Pioneer Geologist of the Middle West* (1943) , and has contributed articles to Isis, the journal of the History of Science Society and to other periodicals. He was historian for the Illinois State Historical Society in the 1960's. Dr. William J. Beecher, PhD. in zoology, University of Chicago, is director of the Academy. Personally familiar with many of the principals, it was his task to complete the history from 1930 to the present.